

**Acquiring and Utilizing Knowledge in Global Value Chains by Emerging Economy  
Firms**

**by**

**Thanyaporn (Main) Soontornthum**

B.A. (*Honours*), Thammasat University, 2006

M.A. University College London, 2010

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## **Declaration of Originality**

I, Tanyaporn Soontornthum (U4723654), declare that the content of this thesis is my own work and that all sources used have been cited. The work presented in this thesis has not been submitted, either in whole, or in part, for a degree at this or any other university. The research involving humans through the use of questionnaires in this study was cleared and approved by the Human Research Ethics Committee (HREC) of The Australian National University. The approval protocol number is 2016/505.

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Similar to learning and upgrading from global linkages of emerging economy firms, this thesis is the product of my interactions with my supervisors at the Australian National University as well as colleagues and friends from Thammasat University and other parts of the world. All mechanisms and processes highlighted in this thesis – (i) network embeddedness, (ii) parallel pathways of transformation-based and assimilation-based absorptive capacity (ACAP), and (iii) relational embeddedness - played a vital role in my learning and upgrading to become an academic. While network embeddedness enabled my access to the knowledge sources, parallel pathways ACAP guided me to update the mental schema through the absorption of incongruent knowledge. Relational embeddedness provided guidance for me in engaging as a long-term, interdependent, and value-creating partner within the scholarly community.

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## Publications Arising from the Thesis

### *Conference Papers*

1. Soontornthum, T. M., Cui, L., & Lu, V.N. (2018 June). Knowledge Transfer in Global Value Chains: The Institutional Logics Perspective of Emerging Market Firms' Learning. Paper presented at *Academy of International Business (AIB) Annual Meeting*, Minneapolis, USA. **(Revised and submitted for review at Management International Review)**
2. Soontornthum, T. M., Cui, L., & Lu, V.N. (2018 June). Different Absorptive Capacities for Different External Knowledge? Emerging Market Firms' Learning in Global Value Chain. Paper presented at *Academy of International Business (AIB) Annual Meeting*, Minneapolis, USA. **(Final list of 2018 AIB Award Nominees for (i) Alan M. Rugman Young Scholar Award, and (ii) The Best Paper Award on Emerging Economies Research)**
3. Soontornthum, T. M., Cui, L., & Lu, V.N. (2017 December). Different Absorptive Capacities for Different External Knowledge? Emerging Market Firms' Learning in the Global Value Chain. Paper presented at *Journal of International Business Studies Paper Development Workshop (JIBS-PDW) at 43<sup>th</sup> European International Business Academy (EIBA) Conference*, Milan, Italy.
4. Soontornthum, T. M., Cui, L., & Lu, V.N. (2017 December). Knowledge Transfer in Asymmetric Vertical Linkage: The Perspective of Emerging Economy Suppliers in Global Value Chains. Paper presented at *Academy of International Business - Southeast Asia Region (AIB-SEAR) Conference and Paper Development Workshop (PDW)*, Chiang Mai, Thailand. **(BEST PAPER AWARD)**
5. Soontornthum, T. M., Cui, L., & Lu, V.N. (2017 November). Different Absorptive Capacities for Different External Knowledge? Emerging Market Firms' Learning in

the Global Value Chain. Paper presented at *Academy of International Business Australia-New Zealand Chapter (AIB-ANZ) Research Symposium*, Dunedin, New Zealand.

### **List of Abbreviation**

ACAP	Absorptive capacity
AVE	Average variance extracted
CI/CIs	Confidence interval/confidence intervals
CMV	Common methods variance
CR	Composite reliability
DOI	Degree of internationalization
EE/EEs	Emerging economy/Emerging economies
FDI	Foreign direct investment
GVC/GVCs	Global value chain/Global value chains
IB	International business
IJV/IIVs	International joint venture/ International joint ventures
IPM	Internationalization Process Model
INVOLVE	Product development involvement
LLL	Linkage-Leverage-Learning
MNEs	Multinational enterprises
OBM	Original Brand Manufacturer
ODM	Original Design Manufacturer
OEM	Original Equipment Manufacturer
R&D	Research and development
RDT	Resource dependence theory



SCOPE	Geographic dispersion/diversity of GVC partnership
SEM	Structural equation modeling
TCE	Transaction cost economics
UNIDO	United Nations Industrial Development Organization
VIF/VIFs	Variance inflation factor/Variance inflation factors

## Dedication

This thesis is dedicated to my beloved parents and family.

Dad, *thank you for supporting me to carry on with this path with courage.*

Mom, *thank you for your unconditional love for, gentleness towards, and hope for me.*

My wife, Ann, *thank you for your love, warmth, and firm belief in me.*

My aunties and uncles, *thank you for your trust in me.*

*You all are my strength and vitality.*

## **Abstract**

Acquiring and Utilizing Knowledge in Global Value Chains by Emerging Economy  
Firms

A thesis submitted in partial fulfilment of the requirements for the degree of  
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Committee Chair:

Associate Professor Lin Cui (ANU)

Committee Members:

Associate Professor Vinh Nhat Lu (ANU), Associate Professor Liem Viet Ngo  
(UNSW), Assistant Professor Karndee Leopaibote

The program of research presented in this thesis is motivated by the global value chains (GVCs) phenomenon. The series of three studies examine the learning of emerging economy (EE) firms participating in GVCs. The conceptual models developed in these studies were derived from three different perspectives, namely network embeddedness, absorptive capacity and resource dependence theory (RDT). Empirical research was then carried out to reveal the mechanisms and processes through which knowledge transfer and learning occur within EE firms. All three studies were conducted on a sample of Thai manufacturing firms taking part in global value chains and mainly from six major industries; namely, consumer electronics and electronics components, machinery and industrial equipment, automotive parts and motorcycles, furniture and decor, textile and clothing, gems and jewelry, and other industries such as chemicals, and iron and steels.

Study 1 (Chapter 3) demonstrates the mediating role of network embeddedness on the relationship between participation in GVCs and knowledge transfer benefits. It also takes into account the moderating roles of historical embeddedness and financial slack of EE firms. This study finds network embeddedness positively mediates the association between GVC participation and the amount of knowledge transferred to EE firms. As expected, the indirect impact of participation in GVCs on knowledge transfer via network embeddedness is strengthened by historical embeddedness and financial slack.

Study 2 (Chapter 4) extends the parallel pathways of the absorptive capacity model. This study investigates knowledge characteristics transmitted in GVCs as contingencies which determine the utilization and effectiveness of the different pathways within the model. The results support the baseline hypotheses regarding the parallel pathways of the ACAP model. The research findings further reveal knowledge specificity strengthens the relationship between acquisition and transformation, while knowledge depth weakens the relationship between assimilation and exploitation, but strengthens that between transformation and exploitation.

Study 3 (Chapter 5) examines the role of rational embeddedness of EE firms in GVCs in their learning from global linkages which leads to future internationalization. The learning contingencies associated with the learning source's international dispersion and the age of the EE firms are also taken into account. The findings reveal product development involvement is positively related to the subsequent degree of internationalization by EE firms. Further, geographic dispersion of GVC partners positively moderates the relationship between product development involvement and the subsequent degree of internationalization.

Overall, this thesis contributes to enriching the body of knowledge on EE firms. Study 1 offers an alternative perspective to partner similarity logic of knowledge transfer by highlighting legitimacy gained from network embeddedness as a critical mechanism to access the learning resources available in GVCs. This study advances current understanding on why the gaining of knowledge transfer benefits through participating in GVCs is not automatic. Study 2 highlights that EE firms can achieve learning through a match between knowledge characteristics transmitted in GVCs and the information-processing process employed within the organizations (i.e., either transformation-based or assimilation-based absorptive capacity). The results clarify how EE firms decode and exploit external knowledge that is incongruent with their existing knowledge stock. Study 3 illustrates the way EE firms play value-creation roles and configure the geographical scope of their partner portfolios in GVCs, which in turn assists them in sustaining resource exchange with the partners and, consequently, contributes to their future internationalization. The study contributes to resource dependence theory by shifting the focus from mutual dependency reflected in the magnitude of economic transactions in arm's length or trade relationships (transactional embeddedness), to the mutual dependence that results from product development involvement in the GVC setting (relational embeddedness). Product development involvement reflects the relational embeddedness of EE firms in GVCs, which, to the best of my knowledge, has not been investigated in the literature on the internationalization of EE firms.

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## **CHAPTER 1: INTRODUCTION AND CONTEXT STATEMENT**

### **1.1 The Significance of Global Value Chains for Emerging Economy Firms**

Among different strands of literature (e.g., exporting, FDI, and spillover effects) analyzing the impact of international linkages on the development of local firms in emerging economies, the global value chain (GVC) has become a mainstream perspective in showing the extent to which international linkages can play a vital role in driving knowledge transfer and learning for emerging economy (EE) firms (Buckley, 2009, Gereffi, Humphrey, & Sturgeon, 2005, Humphrey & Schmitz, 2002, Mudambi, 2008, Schmitz, 2006, Schmitz & Knorrinda, 2000).

The term global value chains (GVCs) captures the vertical disaggregation of the production activities of multinational enterprises (MNEs) as well as their dispersed geographic locations (Buckley & Ghauri, 2004, Buckley & Strange, 2015). Such spatial dispersion of industrial networks link supplier firms in many countries with the international production of MNEs. GVCs also share common characteristics with other terms such as trade in value-added, production sharing, vertical specialization, global supply chains, global factory, global production network, outsourcing, offshoring, or fragmented production. These terms reflect similar phenomena in which “higher volumes of intermediate products such as parts, components and intermediate services are being produced in stages or processes across different countries and then exported to other countries for further production” (Suder, Liesch, Inomata, Mihailova, & Meng, 2014, pg. 406).

Dealing with any strategy or policy issues related to foreign trade affairs inevitably touches upon GVCs. The recent report by the United Nations Industrial Development Organization (UNIDO) clearly emphasized that “... for small firms in developing countries, participation in GVCs is probably one of the few opportunities to

both obtain information about the type and quality of products demanded by consumers in global markets and to actually gain access to those markets” (UNIDO, 2015, p. 159). In other words, GVCs are thus important sources of learning for firms from emerging economies. Therefore, GVC-related issues have emerged as a key concern for any level of business, government agency, and/or international organizations involved with international trade and business.

However, recent research has observed that simply participating in GVCs does not guarantee automatic learning and knowledge transfer benefits (Morrison, Pietrobelli, & Rabellotti, 2008, Schmitz & Strambach, 2009). This is as evidenced in the mixed results regarding learning by EE firms between and within sectors (Lema, Quadros, & Schmitz, 2015) and the variance in upgrading outcomes across a range of industries and countries (Altenburg, Schmitz, & Stamm, 2008, Buckley & Strange, 2015). Indeed, it raises the question of why some EE firms have accumulated advanced knowledge from GVC participation and are able to upgrade their capabilities and functions to become more innovative and competitive, whereas others are not so successful. For example, although the Thai economy has emphasized export-oriented manufacturing activities since the late 1970s, Thai manufacturing firms are heavily constrained as low-cost suppliers and manufacturers (Schmitz, 2006), which often results in low levels of learning and upgrading. The complexity of learning by EE firms thus deserves further scrutiny. The current thesis aims to unpack this issue by investigating the mechanisms and conditions that enable learning and knowledge transfer benefits within the GVC setting.

## **1.2 Research Gaps in Emerging Economy Firm Learning through GVC Linkage Literature**

To investigate the learning complexity of EE firms participating in GVCs, the research program presented in this thesis has identified three issues related to the

learning of EE firms, and proposes three separate studies (as presented in Chapter 3, 4, and 5 of this thesis) as following.

The first issue, investigated under Study 1 (see Chapter 3), deals with the mechanisms that enable knowledge transfer benefits to occur through GVC linkages. External knowledge is considered a prerequisite for EE firms to learn and move up to higher value activities. Nevertheless, as aforementioned, scholars have observed variations in the learning outcomes for EE firms in their acquisition of external knowledge. Network and relational perspectives (Kano, 2017) implicitly assume that members participating in GVCs have sufficient legitimacy in accessing learning resources. However, it is unclear how technologically-laggard firms from emerging economies, which usually have unequal partnerships in GVCs (Schmitz, 2006), gain access and tap into the knowledge sources available thanks to GVC linkages.

Existing literature has suggested gaining legitimate status (Dacin, Oliver, & Roy, 2007, Oliver, 1997) and “insidership” (Johanson & Vahlne, 2009) are crucial to accessing the learning sources available in GVC linkages. An important concept in the Uppsala internationalization process model (Johanson & Vahlne, 2009) is the liability of outsidership, which refers to a firm having no relevant network position and thus it may suffer from a lack of legitimacy to stay and compete. Based on similar logic, it is proposed that outsidership makes it virtually impossible to tap into the knowledge of other chain members. A firm’s success requires a well-established status in network(s), otherwise known as “insidership” (Johanson & Vahlne, 2009).

Similarly, strategy scholars (Dacin, Oliver, & Roy, 2007, Oliver, 1997) have demonstrated gaining legitimacy resources can lessen liabilities and assist in obtaining endorsements from other dominant members and business partners. In contrast with the implicit assumption that chain members have equal legitimacy in obtaining network benefits to increase their learning, the current research looks at learning of EE firms



through the lens of network embeddedness (Andersson et al. 2002) and argue how legitimacy resource gained from network embeddedness enables knowledge transfer within GVC linkages. The mechanisms driving EE firms to gain legitimate status as well as those enabling these firms to learn from the knowledge sources available through GVC linkages have not been extensively addressed. The scarcity of legitimacy perspective in the context of GVC networks is particularly surprising, given its key function in determining inter-organizational relationships (Oliver, 1990). Study 1 aims to address this deficit.

The second issue, examined in Study 2 (see Chapter 4), is that not every EE firm will be successful in combining external knowledge with their operations (Cuervo-Cazurra & Rui, 2017). GVC literature emphasizes the lead firm's intention to disseminate knowledge to EE firms (Humphrey & Schmitz, 2002, Schmitz, 2006, Schmitz & Knorringa, 2000) and international business studies have predominantly focused on the reliance of EE firms on foreign firms for learning (such as Khan, Shenkar, & Lew, 2015, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, McDermott & Corredoira, 2010). Additionally, both literature streams treat EE firms as passive recipients of knowledge (Zhang, Li, Li, & Zhou, 2010), and give less attention to the internal processes of absorbing external knowledge into operations (Morrison, Pietrobelli, & Rabellotti, 2008). This presents a gap in knowledge, in that there is a lack of understanding as to what happens within EE firms when they absorb knowledge transmitted from advanced GVC partners.

With only a few exceptions (Cuervo-Cazurra & Rui, 2017, Rui, Cuervo-Cazurra, & Annique Un, 2016), the internal processes through which external knowledge sources obtained from GVC linkages are absorbed have not been given much scholarly attention. Study 2 utilizes the process model of absorptive capacity (ACAP) (Zahra & George, 2002) to examine the internal processes enabling EE firms to learn through

GVC linkages. Absorptive capacity (Cohen & Levinthal, 1990), it has been argued, is crucial for EE firms to reap the benefits from GVC linkages (Alcacer & Oxley, 2014, Khan, Shenkar, & Lew, 2015, Saliola & Zanfei, 2009). Not only does ACAP allow EE firms to handle the knowledge they have already been endowed with or that they would like to access, it also enables them to coordinate with other advanced GVC partners in knowledge intensive activities requiring greater technical skills (Saliola & Zanfei, 2009). Specifically, this study, based on the parallel pathways of the ACAP process (Todorova & Durisin, 2007), explores the conditions influencing the effectiveness of these different pathways. Analyzing ACAP processes is especially important because many studies on competitive advantage and innovation, while focusing on the processes and relationships of the ACAP components (Cuervo-Cazurra & Rui, 2017, Vasudeva & Anand, 2011, Volberda, Foss, & Lyles, 2010, Zobel, 2017), have provided little understanding about the conditions that influence the relationships among ACAP components.

The third issue, shown in Study 3 (see Chapter 5), is the paradox in GVC participation. GVCs, it has been argued, are a platform for learning and upgrading for EE firms; however, foreign counterparts usually put pressure on EE firms to compete on price and profit squeezing, leading to the relationship instability between EE firms and foreign counterparts in GVC linkages (Schmitz, 2006). Some EE firms may not be motivated to strengthen GVC linkages, and thereby decline to participate in internationalization activities and will eventually exit the GVC. Study 3 thus investigates the extent to which current engagement of EE firms with GVC linkages might be related to their future linkages. This study revisits the recursive process of Linkage-Leverage-Learning (LLL) framework, in which learning outcomes from linkages contribute to greater and/or deeper global linkages that can be further leveraged through repeated applications (Mathews, 2006). Doing so, this study attempts to unpack

linkage characteristics that emerge from the roles EE firms play in GVCs as well as their implications for their future engagement in internationalization activities.

Embeddedness logic of resource dependence theory is employed to explicate the linkage characteristics in the GVC setting. To date, it remains unclear as to what type of linkage EE firms can leverage that will permit their future engagement in internationalization activities. Using GVCs as a research context, Study 3 argues a form of relational embeddedness in GVC partnerships as distinct from transactional embeddedness in arm's length or trade relationship. Highlighting the role of relational embeddedness in GVC linkages (e.g., through product development involvement) can deepen our understanding of the recursive process where the learning outcomes of EE firms enables greater/deeper linkages in the global economy.

### **1.3 Linkage and Overview of the Program of Research**

Responding to the need to understand the complexity of learning and upgrading by EE firms through GVC linkages, this thesis incorporates three separate studies from three different theoretical perspectives (i.e., network embeddedness, absorptive capacity, and resource dependence). The major focus of the first two studies is the internal processes of EE firms. Study 1 highlights the role of network embeddedness as a mechanism allowing EE firms to gain legitimacy and get access the learning resources available in GVCs, while Study 2 endeavors to understand how EE firms absorb external knowledge from GVCs especially when the knowledge stock possessed by EE firms is incongruent with those of their advanced GVC partners. The last study (Study 3) departs from internal processes within EE firms to instead investigate the EE firms' current configuration of GVC linkages through their value-creation roles and the geographic diversity of their partner portfolio, which could have implications for their learning from GVCs as external knowledge sources and, consequently, explain their future GVC engagement. Although the three studies deal with different aspects of EE

firm learning, they are inter-connected in that absorbing and exploiting external knowledge (Study 2) is an important step after gaining knowledge transfer benefits from GVC linkages (Study 1), and Study 3 guides how EE firms can strengthen future GVC linkages which are key knowledge resources in Study 1 and Study 2.

Study 1, drawing from network embeddedness perspective (Andersson et al. 2002), examines the mediating role of network embeddedness on the relationship between EE firms' participation in global value chains (GVC) and knowledge transfer benefits towards them. This study argues that, to receive knowledge transfer benefits from GVCs, relationship-specific investment is necessary to create embeddedness in the global linkage, which in turn grants EE firms with legitimate status to access knowledge of other chain members. Furthermore, this mediated relationship is amplified by EE firms' historical embeddedness that helps them navigate global linkages, and by their financial slack to leverage their network embeddedness. Using multi-sourced survey data from 292 Thai manufacturing SMEs, I find substantial support to the hypothesized relationships. Implications of embeddedness in terms of adaptation and conformity between learning firms and network participants are also discussed in this study.

Study 2 examines the process of absorptive capacities (ACAP) (Zahra & George, 2002) through which EE firms achieve learning in the GVC context. Building on the ACAP and knowledge transfer literature (Asmussen, Foss, & Pedersen, 2013), this study applied two types of ACAP, assimilation- and transformation-based (Todorova & Durisin, 2007), as parallel learning pathways, and argued the learning firms vacillate between these parallel processes depending on the specificity and the depth of knowledge transmitted within the GVCs. It is proposed that assimilation and transformation mediate the relationship between knowledge acquisition and knowledge exploitation in parallel, and these mediated pathways are moderated by the specificity and the depth of knowledge transmitted by GVC partners. The analyses of data

collected from 292 Thai suppliers partaking in GVCs support the hypothesized moderated-mediation relationships. The model highlights key knowledge characteristics as contingencies that determine the way in which firms respond to external knowledge and the relative effectiveness of the two ACAP processes on knowledge exploitation. This study sheds important insights into the processes and their contingencies impacting the way EE firms learn from knowledge transmitted in GVCs.

As EE firms are often resource-dependent on their foreign supply chain partners for global success, Study 3 is built upon the embeddedness logic of resource dependence theory (Gulati & Sytch, 2007), in that it highlights the relational embeddedness emerging from the value-creation roles played by EE firms in GVC linkages and explains the potential resource exchange and learning between partners. Following such logic, this study examines the relationship between the relational embeddedness of EE firms in GVCs and their future engagement in internationalization. The empirical analyses, based on a survey of 291 Thai manufacturing firms, suggest product development involvement (a proxy for relational embeddedness) is positively related to the subsequent degree of their internationalization. Further, geographic diversity within the partner portfolio strengthens the association between product development involvement and future internationalization, as geographic dispersion reduces the dependence of EE firms on a particular foreign partner in terms of revenue generation and knowledge resources.

Overall, the three studies directly deal with the complexity of how EE firms learn from GVCs as external knowledge sources. They reveal the firm-level mechanisms and conditions that may explain the variation in learning, utilization, and upgrading of EE firms. The findings discussed in Study 1, 2, and 3 illustrate learning and upgrading do not occur automatically when EE firms participate in GVCs, but that such learning and upgrading need to be managed strategically by EE firms.

#### 1.4 Research Context of the Three Studies

Southeast Asian countries, with their focus on export manufacturing, represent an appropriate context for studying learning and upgrading by EE firms. Since the late 1970s, Within the region, Thailand has increased its export-oriented manufacturing activities, making Thai firms integral parts of GVCs, as evidenced by their exporting activities accounting for two fifths of the country's GDP. Moreover, Thailand is a leading FDI location in SEA since the mid-1980s, particularly in export-oriented industries such as textiles and garments, electronics, and automotive industries (Pananond, 2013). The country thus has significantly integrated into GVCs and offers an ideal location for this research.

Although GVC linkages provide opportunities for Thai firms to upgrade their capabilities, researchers have indicated that upgrading is a particularly challenging issue for Thai firms as they have been engaged in low-cost and labor-intensive manufacturing functions in the world economy for a significant period of time (Pietrobelli & Saliola, 2008, Saliola & Zanfei, 2009). Further, Thailand exhibits a low level of innovation activities. For example, the number of filed patents has been very low since at least the mid-1990s (Saliola & Zanfei, 2009), when compared with Chinese and Indian firms which have managed to develop significant innovation capabilities from GVC insertion (Altenburg *et al.*, 2008). Such circumstances make learning and upgrading a major concern for Thai policy makers and business practitioners alike.

Thailand, a member of the Association of Southeast Asian Nations (ASEAN) has participated in a large number of Free Trade Agreements (FTAs). These memberships have accelerated the country's integration into various GVCs and thus the integration into GVCs has become an important issue for Thai businesses and government alike. A study of Thai manufacturing firms should be welcome in international business (IB) literature as this context has received relatively limited empirical investigation when compared

with large emerging economies such as China and India. Hence, locating this study in Thailand not only generates insight and implications for the managers of EE firms and the policy makers who deal with GVCs, but it will also add empirical evidence from a small-to-medium sized economy to IB literature.

## **1.5 Organization of the Thesis**

Chapter 1 (Introduction and Context Statement) provides a general introduction on learning by EE firms through GVC linkages. It highlights the research gaps that motivate the development of the current thesis. The overview and linkages of the three separate studies are then briefly described.

Chapter 2 (Literature review) provides a review of the literature related to the GVC phenomenon from both GVC and international business scholars. It also highlights GVCs as learning sources for EE firms and reviews the ways in which EE firms participate and learn through GVC linkages.

Chapter 3 (Study 1: Learning of Emerging Economy Firms in Global Value Chains: The Role of Network Embeddedness) highlights the impact of GVC linkages on knowledge transfer benefits to EE firms via network embeddedness. Additionally, the study takes into account the moderating role of historical embeddedness and financial slack.

Chapter 4 (Study 2: Knowledge Absorption by Emerging Economy Firms from Global Value Chains: The Parallel Learning Pathways and the Moderating Role of Knowledge Contingencies) adopts the parallel pathways of the ACAP model (i.e., assimilation-based versus transformation-based pathways) and extends the model by developing knowledge characteristics in the GVC context (i.e., knowledge specificity and depth) as contingencies of the model.

Chapter 5 (Study 3: Embeddedness in Global Value Chains and Internationalization of Emerging Economy Firms) extends the embeddedness logic of resource dependence theory by distinguishing relational embeddedness from structural embeddedness. The relationships between relational embeddedness and future internationalization activities are then examined. Further, the moderating role of the geographic dispersion of the partner portfolio and the learning inertia associated with organizational age are examined.

Chapter 6 (Concluding remarks) discusses the overall contributions of the three studies to the bigger picture of strategy and the IB landscape. Suggestions regarding future potential research streams are also provided.



## **CHAPTER 2: LITERATURE REVIEW**

This chapter reviews the existing literature on the GVC phenomenon from IB and strategy streams. The review highlights the role of MNEs in configuring and governing GVCs, and then proceeds to argue that GVCs are vehicles through which international knowledge is diffused from advanced firms to technologically-laggard firms in emerging economies. It also classifies different GVC linkages that allow knowledge to be transmitted to emerging economy firms based on the theoretical perspectives of emerging multinationals.

### **2.1 Global Value Chains: The Phenomenon**

MNEs are increasingly outsourcing several production activities, which were previously handled internally, to different optimal locations, while keeping activities in which they have core competencies in house. Their location decisions are often based on a combination of the capabilities of firms in advanced economies and the cost efficiency of firms in emerging economies (Buckley & Ghauri, 2004). Participating in and integrating into the international production of MNEs is possible for EE firms through meeting product quality requirements and complying with the production standardization imposed by MNEs (Nadvi, 2008, Ponte & Gibbon, 2005). This creates the global dispersion of industrial production, a phenomenon that has attracted substantial scholarly attention, giving rise to a range of theoretical approaches and perspectives. Supply chain scholars focus on the relationships of firms with their suppliers and customers when delivering products and services in the most cost-efficient way (Christopher, 2000, Lee, 2002, Lee, 2004), whereas GVC scholars suggest that the entities connected in the value-creating chain are sources of competitive advantages (Al-Mudimigh, Zairi, & Ahmed, 2004, Stabell & Fjeldstad, 1998), stressing the nature of the chain relationship in supporting learning by EE firms (Gereffi, Humphrey, & Sturgeon, 2005). Under the label ‘global factory’, IB scholars have observed globally

distributed operations as complex configurations of MNEs (Buckley & Ghauri, 2004) which are also information structures of knowledge flow to firms in emerging economies, and therefore having a significant impact on economic development (Buckley, 2009, Buckley & Strange, 2015).

The research program presented in this thesis adopts the term ‘global value chain’, which is widely used in the literature on emerging multinationals, to represent the nature of the global economy. The global economy is typically characterized by the global dispersion of production networks that offer knowledge transfer and learning opportunities for EE firms.

GVCs are described by IB scholars as a configuration of the chain of production activities (Hernández & Pedersen, 2017) which is organized by MNEs (Mudambi, 2008, Mudambi, 2007) but is not necessarily owned by them (Buckley & Strange, 2015). MNEs are essentially the key drivers in orchestrating GVCs (Buckley & Prashantham, 2016, Kano, 2017). They seek the best internalization/externalization combination choices of inputs, and then allow discrete business activities to take place in the most optimal locations across the globe (Buckley & Ghauri, 2004). GVCs differ from mainstream foreign direct investment (FDI), recognizing that MNEs can exploit ownership advantages without necessarily having to internalize production activities (Kano, 2017). However, they may retain control over the essential production processes in GVCs through a variety of coordination mechanisms including equity ownerships, contractual modes (e.g., wholly owned subsidiary, joint venture, strategic alliances, or subcontracting and licensing), and market relationships such as exports (Buckley & Strange, 2015, Strange & Newton, 2006). These mechanisms create globally dispersed industrial linkages allowing the manufacturing capacity of MNEs to shift to suppliers in emerging economies in order to capitalize on their low labour costs (Buckley, 2007). In doing so, MNEs can concentrate on higher value-added upstream and downstream ends

such as innovation and market-related activities. The making of GVCs is thus a result of the global sourcing network strategies of MNEs in combining their own competencies and those of their suppliers with location-specific advantages to create competitive advantages (Kotabe & Mudambi, 2009).

According to Kano (2017), in order to claim and sustain the central position of lead firms who orchestrate the GVCs, firms have to possess one or more key idiosyncratic knowledge-based capabilities (e.g., R&D, manufacturing, design, marketing distribution, and/or product management) in forming the vertical core of the network. While core capabilities will allow lead firms to coordinate and govern the GVCs to enhance value propositions, long-term sustainability of the GVCs relies on their ability to implement mechanisms to economize on bounded rationality and reliability and to create enabling environments for capability development within GVCs.

GVCs entail linkages among various production stages across firms in different geographical locations (Mudambi, 2008), from conception to the final consumers, through different phases of activities that together create value-added networks (Kaplinsky & Morris, 2001). These activities are classified into upstream (those activities on design, basic and applied research, and commercialization of the designs and research), middle-end (those activities involving manufacturing on a mass-scale, standardized service delivery, and other repetitive processes), and downstream (those activities related to marketing, advertising, brand management, and after-sales services) (Hernández & Pedersen, 2017). Such activities are linked through the lead firms who determine the character of the chain governance (Gereffi, Humphrey, & Sturgeon, 2005).

Different forms of governance can emerge from the lead firm's orchestration of value chain activities. Gereffi and colleagues (2005) proposed three factors (including

the complexity involved in the transactions, the ability to codify information, and the competencies of the supply-base along the chain) determining five forms of GVC governance, which are hierarchy, captive, relational, modular, and market. These governance modes range from high to low degrees of explicit coordination and power asymmetry. For example, at one extreme, the market governance mode requires little cooperation and simple transactions among value chain members, implying low switching costs. At the other extreme, the hierarchical governance mode may emerge when supplier capabilities are weak, products and specifications are complex, and coordination is difficult. This hierarchical governance requires the internalization or the integration of value chain activities into the control within the lead firm (vertical integration). The other three forms of governance exist between these two extremes. Captive chains may emerge in industrial production networks when supplier capabilities are weak and products and specifications are complex. That is, suppliers are restricted to a narrow set of activities and are highly dependent on lead firms with a high degree of monitoring and control. When suppliers are highly competent and able to provide a full-pack service through turn-key contracts in accordance with the specification of lead firms, the modular governance mode may emerge. This governance mode implies a high volume of codified information flow for production, while lead firms focus on other key activities. Last, when the transaction involves complex information that is not easily codified and requires high levels of trustworthy interactions and knowledge-sharing between value chain members, relational governance may be organized by social relationships and shared norms in order to effectively respond to market dynamics (Hernández & Pedersen, 2017).

In turn, the model of globally dispersed industrial production interlinking EE firms as parts of a network could give rise to more advanced technology and capabilities

for EE firms (Gereffi, 1999, Gibbon, 2001, Humphrey & Schmitz, 2000). This issue is reviewed in the following section.

## **2.2 GVCs as Linkages for EE Firms' Learning and Upgrading**

The idea that local firms in emerging economies can learn from MNEs to whom they supply products or intermediate inputs has been explored in studies related to the direct and indirect impact FDI on developing countries (Blalock & Simon, 2009, Eapen, 2013, Eapen, 2012, Meyer, 2004, Meyer & Sinani, 2009, Pack & Saggi, 2001, Spencer, 2008, Zhang, Li, Li, & Zhou, 2010). FDI linkage literature proposes the presence of foreign investors benefits local firms, leading to technology catch-up and upgrading. Linkages with foreign counterparts are thus seen as a key mechanism through which technologies and know-how are transferred to local firms in emerging economies (Giroud & Scott-Kennel, 2009, Hansen, Pedersen, & Petersen, 2009, Hotho, Lyles, & Easterby-Smith, 2015). For instance, Tavčar and Dermol (2012) discussed the strategies adopted by global SMEs when they exploit linkages with MNEs (e.g., outsourcing, operating contracts, cooperation, joint ventures, etc.) to maximize learning potential and even to become mutual learning partners. Similarly, Giroud and Scott-Kennel (2009) discussed a broader scope of linkages that impact the capability development of local firms. This thesis views GVCs as important forms of linkages allowing EE firms to acquire intangible resources that are unavailable within their own local markets. Recent studies report evidence on the positive learning and upgrading effects for EE firms as a result of GVC linkages (Alcacer & Oxley, 2014, Corredoira & McDermott, 2014, Khan, Shenkar, & Lew, 2015, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, McDermott & Corredoira, 2010, Saliola & Zanfei, 2009).

Different from the FDI spillover effect, the GVC approach implies that learning and upgrading by EE firms do not occur randomly. Rather, such learning and upgrading occur when activities are linked through advanced lead firms in GVCs (Gereffi, 1999).

This perspective highlights GVCs as vehicles for international knowledge diffusion from advanced economies to less-developed ones (Buckley, 2009, Ernst & Kim, 2002) via the organized industrial linkages where more technologically advanced lead firms are incentivized to share and deliberately pass on knowledge and know-how to independent local supplier firms (Ernst & Kim, 2002, Ramirez & Rainbird, 2010). The underlying motivation is to ensure that EE firms can meet the requirements of the lead firm (in terms of quality, speed, and flexibility), allowing lead firms to increasingly concentrate on higher value-added activities instead. Hence, the current research emphasizes GVCs as a more powerful vehicle for knowledge transfer to and learning by EE firms than previous models of MNEs that tend to keep production activities in-house.

By performing activities for lead firms, learning by EE firms is expected to occur. Learning is the process in which skills and knowledge are acquired by individuals and, through them, firms (Guzman & Wilson, 2011). The experience gained from learning-by-doing is especially important in the firms' acquisition of tacit knowledge (Kotabe & Mudambi, 2009), which allows organizations to deepen their technological and innovation capabilities (Gereffi, 1999, Morrison, Pietrobelli, & Rabellotti, 2008, Pietrobelli & Rabellotti, 2006) and subsequently move up to a new and more competitive position (Altenburg, Schmitz, & Stamm, 2008). The new competitive position is considered as upgrading where, according to Schmitz (Schmitz, 1999, Schmitz, 2004), suppliers engage in the process of improving their ability to move up to more profitable or technologically sophisticated activities. Nevertheless, Morrison, Pietrobelli, and Rabellotti (2008) suggested that upgrading at firm-level is, fundamentally, capability development and does not necessarily equate to climbing up the value chain. Further, they claimed upgrading can be used both as a synonym for innovation and the outcome of an innovation process.

There is a general agreement among GVC scholars that upgrading activities can be classified into four areas (Humphrey & Schmitz, 2002). First, production process upgrading takes place when EM suppliers are able to perform transformation of inputs into outputs more efficiently. Second, EE firms experience product upgrading when they are able to supply more sophisticated products with a higher unit value. Third, functional upgrading occurs when EE firms migrate to business functions that require more sophisticated skills to create higher value-adding activities. The biggest challenge for EE firms is to move upwards in terms of their functional position from being an assembler to the more integrated positions of Original Equipment Manufacturer (OEM), Original Design Manufacturer (ODM), and finally Original Brand Manufacturer (OBM) where products are sold under their own brand (Buckley, 2009). To move beyond mere execution to manufacturing a given specification and then to become a brand owner using those upgrading trajectories, EE firms not only require the development of technological capabilities in production processes and product quality, but also in design, marketing, and research skills both downstream and upstream of the value chain (Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012). Finally, EE suppliers engage in inter-sectoral upgrading when they are able to apply existing competencies to another sector or into a new chain.

The GVC literature argues the learning and upgrading by EE firms are influenced by characteristics of chain governance (Pietrobelli & Rabellotti, 2011). Based on Humphrey and Schmitz's (2002) analysis, arm's length market relationships are more favorable for functional upgrading, while process and products tend to be sluggish, and quasi-hierarchical relationships tend to allow production process and product upgrading. Furthermore, lead firms can leverage superior bargaining power to appropriate higher rent from EE firms by squeezing the margin of the activities of EE

firms, thus creating unequal distribution of any gains among the members (Schmitz, 2006).

In addition, GVCs are not always conducive to learning and knowledge transfer (Schmitz, 2006, Schmitz & Strambach, 2009) as there may be a ceiling or upper limit for the development of the capabilities of EE firms. As an example, Gereffi (1999) found that in buyer-driven chains East Asian garment producers showed successful upgrading into knowledge-intensive activities, whereas Schmitz and Knorrinda (2000) revealed global buyers discouraged suppliers from improving their capabilities in design, marketing, and branding, and only allowed the upgrading of product and process capabilities. These scholars further argued that lead firms can be supportive of the supplier's acquisition of capabilities that strengthen the local supplier's current position in the GVC (Schmitz & Strambach, 2009), while the development of capabilities that do not favour the lead firm's interests are less likely to receive their support (Lema, Quadros, & Schmitz, 2015, Schmitz & Strambach, 2009). Therefore, GVC linkages do not always guarantee learning and knowledge transfer for participating EE firms.

### **2.3 Emerging Economy Firm Learning from GVC Linkages: Strategy and International Business Literature**

The GVC literature draws the attention of strategy and IB researchers to the specific upgrading and mechanisms of EE firms that enable the transfer and learning of new knowledge through their participating in GVC linkages (Alcacer & Oxley, 2014, Awate, Larsen, & Mudambi, 2012, Corredoira & McDermott, 2014, Khan, Shenkar, & Lew, 2015, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, McDermott & Corredoira, 2010, Saliola & Zanfei, 2009). Generally, EE firms are situated in innovation systems that differ from those in advanced economies, such as lower investment in public R&D, low protection of intellectual property rights, fewer skilled employees, and weak relationships between industries and universities (Cuervo-



Cazurra, 2012, Rui, Cuervo-Cazurra, & Annique Un, 2016). Thus they cannot solely rely on their home-country environments when advancing their technological capabilities, and tend to upgrade their capabilities by learning from their advanced economy counterparts (Luo & Tung, 2018, Luo & Tung, 2007, Mathews, 2017, Mathews, 2006). Apart from imitating what advanced economy firms have done (Rui, Cuervo-Cazurra, & Annique Un, 2016), EE firms accumulate capabilities and strengthen their competitive position by (i) being a part of the GVCs of foreign firms, and (ii) acquiring firms in advanced economies.

The first approach is to rely on the knowledge foreign firms have by forming alliances with their foreign subsidiaries operating in emerging economies and becoming a part of their globally distributed operations or GVCs to acquire advanced knowledge (Alcacer & Oxley, 2014, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, Mathews, 2017, Mathews, 2006). The Linkage-Leverage-Learning (LLL) paradigm (Mathews, 2006) is aligned with this approach. It emphasizes the behaviors of EE firms in tapping into intangible resources in a networked global business system by creating international linkages to access resources unavailable in their home markets. From this perspective, EE firms repeatedly create linkages with foreign partners and leverage them to obtain and/or use resources and then learn or upgrade their resources and capabilities. LLL suggests that, for EE firms, collaborations through both non-equity partnerships and equity joint ventures are preferred over wholly-owned subsidiaries (Thite, Wilkinson, Budhwar, & Mathews, 2015).

Based on this approach, scholars found supporting evidence for a positive relationship between GVC linkages and learning and upgrading by EE firms. Alcacer and Oxley (2014), for example, found that technological learning of OEM suppliers is strong as they accumulate experience in supply relationships, especially when they are involved in both manufacturing and design activities rather than a manufacturing-only

relationship (pure OEM). However, evidence of upgrading of marketing capabilities is mixed as most suppliers have attempted to introduce their own branded products at some point, but few actually generate large sales volumes. Similarly, the literature on learning by exporting found that exporting leads to significant increases in technological and product innovation by EE firms (Foster-McGregor, Isaksson, & Kaulich, 2014, Golovko & Valentini, 2014, Salomon & Jin, 2010, Salomon & Jin, 2008, Salomon & Shaver, 2005). For instance, Salomon and Shaver (2005) found exporting activities help firms to access diverse knowledge inputs not available in their domestic markets. This knowledge can spill back to the local firms and such learning can support innovation. Salomon and Jin (2008) found firms in technologically lagging industries learn more from exporting than those in technologically leading industries, indicating an opportunity for EE firms to benefit disproportionately from knowledge spill-over associated with exporting activities.

Kumaraswamy, Mudambi, Saranga, and Tripathy (2012) also argued that technology licensing/collaborations and joint ventures with MNEs are necessary for learning by EE firms and these enable firms to embed sustainably into GVCs. International joint ventures (IJV) are generally recognized as a more effective linkage mode than arm's-length transactions when knowledge transfers are in the pre-paradigmatic phases of technology development (Saliola & Zanfei, 2009). Scholars found that linkage in the form of IJV can be a vehicle for learning and knowledge flow, voluntarily or involuntarily, across partners and are especially important for innovation by and upgrading of EE firms (Awate, Larsen, & Mudambi, 2012, Herrigel, Wittke, & Voskamp, 2013, Khan, Lew, & Sinkovics, 2015, Khan, Shenkar, & Lew, 2015, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, Zhao & Anand, 2009, Zhao, Anand, & Mitchell, 2005). For example, Khan, Shenkar, and Lew (2015) found that IJV located in Pakistan not only transferred knowledge to each other but also to their local

network suppliers (third party suppliers in their supply chains). Focusing on the transfer of capabilities and knowledge into emerging economies, Zhao, Anand, and Mitchell (2005) observed that there were knowledge flows, intentionally, from different MNE network members to IJV and, there were, unintentionally, subsequent capability transfers to different members of local recipient networks. Using IJV in transitional economies as a context of study, Dhanaraj, Lyles, Steensma, and Tihanyi (2004) drew from relational embeddedness to explain social relationships between the foreign parent and the IJV as a determinant of knowledge transfer. Their empirical study showed that relational embeddedness (tie strength, trust, and shared values and systems) is more essential in the transfer of tacit knowledge than in the transfer of explicit knowledge.

Another approach is the cross-border acquisition of advanced economy firms by EE firms in order to learn advanced knowledge and to upgrade their competitive position in GVCs (Deng, 2009, Gubbi, Aulakh, Ray, Sarkar, & Chittoor, 2010, Luo & Tung, 2018, Luo & Tung, 2007, Madhok & Keyhani, 2012). EE firms may undertake outward internationalization to acquire firms in advanced economies and become players in the global economy as a result of knowledge acquired from the inward internationalization of advanced firms in emerging economies (Rui, Cuervo-Cazurra, & Annique Un, 2016). This approach is aligned with the springboard perspective (Luo & Tung, 2018, Luo & Tung, 2007), in the sense that EE firms aggressively use international expansion as a springboard ‘to acquire strategic resources to compensate for their capability voids, overcome laggard disadvantages, exploit competitive advantages and market opportunities in other countries, alleviate institutional and market constraints at home and bypass trade barriers into advanced markets, and better compete with global rivals with augmented capabilities and improved home base after strategic asset acquisition’ (Luo & Tung, 2018, p. 130-131). According to springboard perspective, cross-border acquisition is an important means to repatriate critical assets

from other advanced economies to upgrade their capabilities and technology advantages (Luo & Tung, 2007). This perspective also takes into account several investment modes that so far have received scant attention, namely, equity participation, co-development, greenfield investments, cross-licensing, co-production, co-marketing, co-branding, and divestments (Luo *et al.*, 2018). For example, (Rui & Yip, 2008) found Chinese firms use cross-border acquisition to acquire strategic capabilities to offset their competitive disadvantages and to leverage their own unique ownership advantages. Likewise, Pananond (2016) found that a Thai multinational enterprise used outward FDI to transform itself from “servant to master. Cross-border acquisition of global brands, Pananond (2016) argued, was the means by which the MNE could engage in this power-repositioning within a shelf-stable seafood value chain as it increased the firm’s power and control of technology and its market share in the GVC.

## **2.4 Literature Review Synthesis: Towards Unexplored Aspects**

Overall, IB research conducted to date substantiates the role of GVC linkages as external knowledge sources for EE firms. It has developed significant understanding on the behavior of EE firms in regard to resource linkages with foreign partners in order to upgrade their competitive advantage in the global economy. At the same time, the literature review has yielded unexplored areas which provide opportunities to advance a holistic understanding of learning from global linkages by EE firms, such as EE firms in GVC settings.

First, current research has focused on large EE firms and IVJ. Little is known about how EE firms, which start off and usually remain in an unequal partnership with other players in a GVC (Gereffi, Humphrey, & Sturgeon, 2005, Schmitz, 2006), ensure knowledge transfer benefits from GVC linkages. They may indeed utilize different mechanisms from large EE firms in this process. The uneven status of EE firms in GVC linkages points toward the need for a closer examination of the legitimacy status of EE

firms to access knowledge sources available from partners in GVCs. Study 1 (See Chapter 3) examines this issue in particular.

Second, considerable research acknowledges the difficulty in learning and utilizing external knowledge by EE firms (Alcacer & Oxley, 2014, Blalock & Simon, 2009, Saliola & Zanfei, 2009, Zhang, Li, Li, & Zhou, 2010), especially in GVCs where the knowledge transmitted is specific to the knowledge source/partner in a specific GVC and requires in-depth understanding to utilize such knowledge. Nevertheless, how EE firms deal with incongruent knowledge distant from their existing knowledge stock is not fully understood. Hence, there exists the need to understand the internal knowledge-processing mechanisms EE firms use to absorb such knowledge in GVC linkages. Study 2 (See Chapter 4) attempts to explicate this complexity of learning by EE firms.

Third, while LLL paradigm suggests a recursive process or repeated application of linkage and leverage (Hung & Tseng, 2017, Lu, Ma, Taksa, & Wang, 2017, Mathews, 2017) - that is, the existing linkage leverages the learning of EE firms and, in turn, allows them to further develop additional linkages with foreign counterparts which again allows them to leverage learning from the new set of linkages to compete in a global economy, foreign counterparts may still put pressures on EE firms to compete against each other on prices and profits, leading to relationship instability (Schmitz, 2006). Some participating EE firms may even decline to be involved in international activities and exit the GVCs as a result. This observation is somewhat inconsistent with the linkage benefit debated by international business scholars (Mathews, 2006). So far, IB literature has offer limited explanations as to why some linkages cannot be leveraged and may not be conducive to learning. Again, this deficit points to the need to unpack the linkage characteristics that emerge from the roles EE firms play in GVC settings,

and their implication for future internationalization activities. Study 3 (See Chapter 5) focuses on the shortfall.

## CHAPTER 3

### **Study 1: Learning of Emerging Economy Firms in Global Value Chains: The Role of Network Embeddedness**

**Research summary:** International networking is instrumental to the internationalization of emerging economy (EE) firms. Drawing from a network perspective, this study examines the mediating role of network embeddedness in the relationship between EE firms' participation in global value chains and the benefits they gain by the transfer of knowledge they gain. This study argues that, to receive knowledge transfer benefits from global value chains, relationship-specific investment is necessary to create embeddedness in the global linkage, which in turn provides EE firms with a legitimate status to access knowledge owned by other chain members. Furthermore, this mediated relationship is amplified by EE firms' historical embeddedness, which helps them navigate global linkages, and by their financial slack to leverage their network embeddedness. Using multi-sourced survey data from 292 Thai manufacturing firms, this study finds substantial support for the hypothesized relationships. The implications of embeddedness in terms of adaptation and conformity between learning firms and network participants are also discussed in this paper.

**Keywords:** Network embeddedness; Legitimacy; Knowledge transfer; Global value chains; Emerging Economy Firms

**Note:** The earlier versions of this study were presented in two conferences. Please refer to Publications Arising from the Thesis (item 1 and 4).

### 3.1 Introduction

Technologically-laggard firms, especially those from emerging economies, often resort to linkages with resource-endowed foreign counterparts as an important source of learning (Hitt, Li, & Worthington, 2005) for their lack of technological resources and capabilities. The Linkage–Leverage–Learning (LLL) framework conceptualizes such behavior of emerging economy (EE) firms as resource leverage strategizing in a networked global business system (Luo & Wang, 2012, Mathews, 2017, Mathews, 2006, Thite, Wilkinson, Budhwar, & Mathews, 2015). The literature suggests that the network embeddedness of the firms is critical for their ability to access knowledge in global linkages (Ge, Fu, Xie, Liu, & Mo, 2018, Saliola & Zanfei, 2009). However, network embeddedness does not occur simply as a result of these linkages. Empirical evidence shows firms in networks may develop different degrees of embeddedness (Andersson, Björkman, & Forsgren, 2005, Andersson, Forsgren, & Holm, 2002, Andersson, Forsgren, & Holm, 2001) and thus gain different levels of ‘insidership’ (Johanson & Vahlne 2009) or legitimacy status (Dacin, Oliver, & Roy, 2007, Oliver, 1997). However, studies have not explained what enables network embeddedness nor the mechanism through which it delivers knowledge transfer benefits for the learning firm (Ford, 2002, Granovetter, 1985, Reagans & McEvily, 2003, Uzzi, 1996). To address this knowledge gap, the current study aims to provide a clearer understanding about the mechanisms driving EE firms’ embeddedness in global linkage and its effects on knowledge transfer benefits.

Global Value Chains (GVCs) are an important form of global linkage allowing EE firms to acquire intangible resources unavailable in their home markets (Alcacer & Oxley, 2014, Awate, Larsen, & Mudambi, 2012, Herrigel, Wittke, & Voskamp, 2013, Khan, Lew, & Sinkovics, 2015). GVCs entail vertical linkages incorporating various production stages across firms in different country locations (Mudambi, 2008) that



jointly pursue value-adding potential (Kaplinsky & Morris, 2001). Since GVCs are platforms for knowledge flow and inter-firm collaboration, they are an important source of learning for EE firms (Connelly, Ketchen, & Hult, 2013, Saliola & Zanfei, 2009). However, knowledge transfer in GVCs does not automatically occur in a linear fashion (Schmitz 2006; Schmitz & Knorrninga 2000). Studies show that, being resource-dependent on the dominant members of GVCs, EE firms may be deprived of strategic activities (Cuervo-Cazurra & Rui, 2017, Schmitz, 2006, Schmitz & Strambach, 2009), which can be a barrier to their internationalization success.

Based on the network perspective (Granovetter, 1985, Uzzi, 1996), this study proposes a mediating model where network embeddedness serves as a mediating condition for EE firms to achieve knowledge transfer benefits from GVC linkages. I also propose resource contingencies of the mediated model, where experiential resources and financial resources moderate different stages of the proposed mediated relationship. Specifically, I argue that in the first stage EE firms with greater historical embeddedness will be more willing to make relationship-specific investments with their GVC partners, resulting in a stronger association between their GVC linkage and their network embeddedness. Furthermore, I posit that, in the second stage, financial slack facilitates EE firms' leverage of their network embeddedness for strategic activities such as exploratory learning, yielding greater benefits from that embeddedness.

This study makes three main contributions. First, while the LLL framework suggests that technologically-laggard firms (e.g., firms from emerging economies) leverage knowledge resources unavailable at home by learning from linkages with foreign firms (Mathews, 2006), it is unclear how they gain access to the knowledge sources available through such linkages. This study adds to the LLL explanation about the learning of the firms by highlighting the mediating role of network embeddedness between GVC participation and knowledge transfer benefits. Second, this study

integrates network and legitimacy perspectives by highlighting that network embeddedness grants firms the legitimacy status to access knowledge from other GVC partners. Third, this study links resource dependence logic to explain the variation in network embeddedness and its impact on knowledge transfer benefits to EE firms participating in GVCs. Altogether this study enriches the research into international business networks in the context of GVCs, emphasizing the importance of international networking for the internationalization success of EE firms in an increasingly globalized marketplace.

## **3.2 Theory and Hypotheses**

### **3.2.1 The global value chain: Enabler of knowledge transfer**

According to the network perspective, ongoing relationships within a network allow knowledge and resources to be transmitted among its partners (Ford, 2002, Granovetter, 1985, Reagans & McEvily, 2003, Uzzi, 1996). For instance, foreign firms are incentivized to share or pass on knowledge and technological know-how to their emerging economy partners (Schmitz, 2006, Schmitz & Knorringer, 2000), ensuring the latter can meet their quality requirements for production and processes (Nadvi, 2008, Ponte & Gibbon, 2005). GVCs are, in other words, vehicles for international knowledge diffusion from firms with advanced technology and know-how, typically mature firms from advanced economies, to firms from emerging economies (Buckley, 2009, Guzman & Wilson, 2011). For example, research by Alcacer and Oxley (2014) on supply relationships in the mobile telecom industry indicates that technological learning of original equipment manufacturing suppliers is strong and unequivocal because they accumulated experience in GVC linkages, especially when they were involved in both manufacturing and design activities. Likewise, Saliola and Zanfei (2009) suggest the transmission of technical and organizational competencies to emerging economy firms was positively associated with the presence of global buyers in local markets. In another

study, Pietrobelli and Saliola (2008) find that involvement between foreign and emerging economy firms regarding the definition of product, design, quality, technology, and research and development (R&D) is positively related to the productivity of emerging economy firms.

However, knowledge transfer benefits of GVC linkage are not automatic (Schmitz, 2006, Schmitz & Knorrinda, 2000), depending on whether and the extent to which firms are embedded within a GVC linkage (Andersson, Forsgren, & Holm, 2002, Andersson, Forsgren, & Holm, 2001, Ge, Fu, Xie, Liu, & Mo, 2018, Saliola & Zanfei, 2009). Network embeddedness emphasizes that the relationships of a firm with their customers, suppliers, and competitors facilitates exchange of information. Firms strongly tied to each other are more capable of exchanging information and thus learn from one another to a greater extent. Furthermore, Andersson and colleagues (2002) illustrate that embeddedness is a continuous variable and can be developed as a result of adaptation between partners. That is, partner firms are willing to make relationship-specific investments (Dyer & Singh, 1998, Hoskisson, Gambeta, Green, & Li, 2018) by extensively adapting and conforming their behavior in terms of routines, planning systems, and information to create a long-lasting relationship, as opposed to engaging in purely arm's length relationships. Thus, they define embeddedness as "closeness in a relationship, which reflects the intensity of information exchange and the extent to which resources between parties in the dyad are adapted" (Andersson, Forsgren, & Holm, 2001, p. 1016). In the context of EE firms' learning from GVC partners, this study argues that GVC embeddedness is an important step toward knowledge transfer, the magnitude of which may vary because of different degrees of network embeddedness that EE firms have with GVC partners.

Lead firms in GVCs, usually leading technological firms from advanced economies, are key actors in constructing a value chain of global production by

choosing optimal locations and combining their own competencies and the specific advantages of emerging economy firms in those locations to create competitive advantage (Kotabe & Mudambi, 2009, Mudambi, 2008). Simultaneously, GVC lead firms augment their capacity to coordinate the dispersed value chain of global production through organizational practices and modular production processes that rely on product and process standardization and routinized interfaces with other value chain partners (Nadvi, 2008). From the perspective of EE firms participating in GVCs, I argue that the more heavily they are involved with GVC customers, the more likely they are to make relationship-specific investments, and such relationship-specific investments create embeddedness that facilitates knowledge transfer between GVC partners. I explicate this argument below.

Resource dependence theory suggests that the extent to which a firm adapts and conforms to other firms depends on their resource dependence structure (Oliver, 1991, Pfeffer & Salancik, 2003). For example, Besharov and Smith (2014) contend that the pattern of resource dependence influences logic centrality regarding core work practices of the member organizations, even if they do not agree with the logic underlying those demands. Other scholars (DiMaggio & Powell, 1983, Oliver, 1991) claim when member organizations are dependent on particular actors for critical resources, the dominant members tend to exercise compliance pressure on the dependent members. These dependent members, in turn, face greater pressure to adapt and conform to the expectations dominant members have of them to secure access to critical exchange resources (Oliver, 1991, 1997). Thus, dependent members are more likely to adapt their behaviors to the lead partners on whom they depend for resources. Based on this resource dependence logic, the level of dependence EE firms have on their GVC partners determines the extent to which they are pressurized to change their own

behaviors to resemble the GVC partners on which they depend for resources (DiMaggio & Powell, 1983, Oliver, 1991).

Conversely, when resource dependence is low (e.g., when EE firms only engage in ad-hoc and/or small-scale transactions in GVC), firms receive less pressure and are less likely to adapt and conform to the GVC network norms. This difference in dependence level of EE firms on other GVC members thus creates variation in network embeddedness across member organizations of the GVC. Hence, the degree of network embeddedness of EE firms can be varied by the level of dependence they have on their GVC members, which is also a basis for them to make decisions about relationship-specific investments.

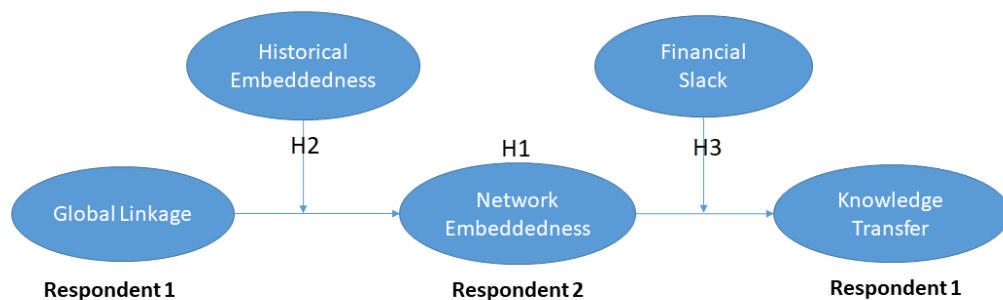
As previously discussed, relationship-specific investment is a response by resource-dependent firms to other GVC members, and the extent to which firms invest in the relationship by changing and conforming to the other GVC partners reflects the degree of their network embeddedness. Therefore, I argue, relationship-specific investment causes the firms to model their practices on those of the GVC partners (Liu, Ke, Wei, Gu, & Chen, 2010). I further maintain that relationship-specific investment to create embeddedness can also benefit EE firms because it facilitates the establishment of their legitimacy with other GVC members. Legitimacy is generally referred to as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995, p. 574). Legitimacy itself is judged by social justification and obligation (Scott, 1995, Zukin & DiMaggio, 1990) and is related to the degree to which a firm’s behavior appears to comply with the social norms, values, and expectations of other partners (Dacin, Oliver, & Roy, 2007). Hence, the legitimacy of EE firms is expected to increase as they invest more in GVC relationships to create embeddedness.

Legitimate members are perceived to be reliable (Meyer & Rowan, 1977), such that they are considered less prone to failure (Drees & Heugens, 2013). Baum and Oliver (1991) find resource-providing firms prefer to establish working relationships with firms that have a strong social standing, because such linkages are less likely to threaten their own reputation. Other scholars (Deephouse, 1999, Kostova, 1999, Kostova & Roth, 2002) also support the notion that gaining legitimacy contributes to learning, survival, and success.

In summary, the degree of network embeddedness of EE firms results from the extent to which they are dependent on resource-providing GVC partners because such dependency pressurizes the firms to invest in maintaining the relationship with those GVC partners. The increasing network embeddedness, in turn, grants them legitimacy status, which is important to access learning resources available from the other GVC members. Therefore, it is expected that the knowledge transfer benefits from the participation of EE firms in the GVC occurs via their network embeddedness, because it helps increase their legitimacy resource and thereby permits them to access learning resources available from other members in the GVC (see Figure 1). I hypothesize that:

*Hypothesis 1: Network embeddedness of emerging economy firms mediates the positive relationship between the firms' participation in GVC linkages and knowledge transfer to them.*

**Figure 1: The proposed model for study 1**



### 3.2.2 Resource contingencies of the mediating model

The hypothesized mediated relationship is subject to resource contingencies. Informed by network building (Andersson, Forsgren, & Holm, 2002) and the behavior argument of organization theory (George, 2005, Kim, Kim, & Lee, 2008, Tan & Peng, 2003), this current study contends that there are experiential and financial resource contingencies moderating the mediated relationship at different stages, as described below.

I argue that the first stage of the mediated relationship, namely the association between EE firms' GVC linkages and their network embeddedness with GVC partners, is moderated by EE firms' experiential resources. The longer the exposure of EE firms to GVC networks, the more likely they will take action in response to their resource-dependent relationships. Scholars (Andersson, Forsgren, & Holm, 2002, Saliola & Zanfei, 2009) maintain that network embeddedness is a process requiring a significant period of time, hence the duration of an SME's exposure to a GVC linkage is likely to establish a greater level of embeddedness. A longer historical embeddedness in a GVC linkage is expected to enable deeper understanding of GVC practices, norms, and codes of conduct. This promotes trust building while reducing appropriation risk, making transactions more effective between the partners (Burchell & Wilkinson, 1997). With such experiential resources, the SME is thus more willing to make relationship-specific investments in its GVC partners, resulting in a higher degree of network embeddedness. In contrast, the association between GVC linkage and network embeddedness is likely to be weak if the SME does not have sufficient time to develop understanding and trust with its GVC partners. Therefore, I hypothesize that:

*Hypothesis 2: The positive association between emerging economy firms' GVC linkages and their GVC network embeddedness is stronger when the firms' historical embeddedness is high as opposed to low.*

I further argue that the second stage of the mediating relationship, namely the association between EE firms' network embeddedness with GVC partners and knowledge transfer toward the EE firms, is moderated by financial resources, since greater financial slack increases the firms' ability to leverage network-embedded GVC linkages for learning. Financial slack is defined as the "cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment" (Bourgeois, 1981, p. 30). Financial slack therefore improves the ability of risk-taking in the strategic choices of a firm (George, 2005) by helping it relax internal capital restrictions for investment decisions. While learning involves risk-taking and uncertainty of return, especially in the short term, financial slack provides a resource buffer, allowing funds to be directed toward new investments or projects that facilitate the firm's learning (George, 2005, Kim, Kim, & Lee, 2008, Tan & Peng, 2003), even though the investment or project may generate uncertain outcomes (Voss, Sirdeshmukh, & Voss, 2008, Wiseman & Bromiley, 1996). In contrast, such new investments or projects would not be possible in the face of scarcity (Bourgeois, 1981), thereby hampering the capacity of EE firms to learn from working relationships with resourceful GVC partners. I therefore hypothesize that:

*Hypothesis 3: The positive association between emerging economy firms' GVC network embeddedness and knowledge transfer toward them is stronger for EE firms with higher levels of financial slack than those with lower levels of financial slack.*

### **3.3 Research Design and Methods**

#### **3.3.1 Sampling frame and characteristics**

Firms from Southeast Asian EEs have been actively engaged in GVCs as a platform for growth, learning, and ultimately global competitiveness building. Despite



the significance of GVCs as a source of learning for firms from these EEs in general, issues related to the GVC linkage and knowledge transfer have received limited empirical attention. In this context, Thailand offers an ideal empirical location for this study due to the strong connection of Thai firms to GVCs linkages as suppliers for their foreign counterparts. Although Thailand has participated in GVCs as a key platform for economic growth over several decades, it still has a low technological (Saliola & Zanfei, 2009). Learning from GVCs linkages is therefore especially important for Thai firms in their quest for a competitive advantage. In this study, it is assumed that Thai firms are technologically-laggard GVC counterparts who resort linkages with more advanced GVC partners regardless of their partners' origins from emerging or developed economies.

As there is no specific list of Thai GVC firms available, I drew a random sample of 1000 Thai manufacturing firms based on the list provided by Thailand's Department of International Trade Promotion (DITP). These firms are regarded by DITP as suppliers to foreign firms. A total of 895 firms had valid contact details. Using a two-step procedure to improve the survey response rate, I first conducted telephone pre-screening to identify two potential respondents from each firm (including the top/executive manager/director and another manager responsible for the operations and technology of the organization). Second, based on their initial agreement, I made contact with the two identified respondents from each firm and collected data through either a face-to-face or phone interview. If an appointment for the interview could not be organized, a questionnaire was delivered to the potential respondent by either post or email. Data were collected in Thai language. A reverse-translation procedure was involved to ensure comparability between the English and Thai versions of the survey instrument. All questionnaire items were pretested and validated by one business

executive and three strategic management scholars prior to the distribution of the survey.

After three follow-up reminders, 351 responses were received. I excluded 59 responses for having (i) too many missing values, (ii) only a single response, or (iii) the firm age < 6 years<sup>1</sup>. After excluding the unusable questionnaires, this study retained 292 useable responses (32.6% response rate) predominantly from six major industries.<sup>2</sup>

To avoid common methods variance (CMV), this study obtained data from two respondents in each organization (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Top managers (respondent 1) were asked to respond to question set 1, and senior managers responsible for operations and technology (respondent 2) were asked to respond to question set 2 (more details in the following section).

Following the extrapolation methods, a test of non-response bias showed no significant difference of mean comparison t-test between the 248 regular vs. 44 late responses on key variables. Further, the sample distributions were mostly consistent with the population information on key distributional characteristics (see Table 1).

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<sup>1</sup> This survey involved retrospective information from 2011 to 2016.

<sup>2</sup> Consumer electronics & electronics components (7.8%), machinery and industrial equipment (8.2%), automotive parts & motorcycles (9.93%), furniture and decor (12.33%), textiles and clothing (10.96%), gems and jewellery (26.37%) and other industries (24.4%)

**Table 1: Sample firms and key distributional characteristics**

<b>Firm Age (Years, %)</b>						<b>Export (%)</b>		
MIC 2012 (N=424,196)	<5 18.4	5-9 26.2	10-19 34.8	20-29 12.8	>30 7.8	< 20 25.90	20-49 26.3	> 50 47.8
This sample (N=292)	n/a	8.2	54.5	20.6	16.6	13.7	50.0	36.3
	<b>No. of Emplo yees (Size)</b>		<b>Thai Firms (%)</b>	<b>Joint Ventures (%)</b>	<b>Foreign Firms (%)</b>	<b>Total (%)</b>		
TFP2015 (N=903)			28.60	1.40	0.80	30.80		
This sample (year 2015, N=120)	< 50		38.01	3.08	0.00	41.09		
TFP2015 (N=960)			27.70	3.30	1.70	32.70		
This sample (year 2015, N=74)	51-200		15.41	5.82	4.11	25.34		
TFP2015 (N=1069)			26.30	6.00	4.20	36.50		
This sample (year 2015, N=98)	> 200		8.90	11.30	13.36	33.56		
Total TFP2015 (N=1069)			82.60	10.60	6.70	100		
Total sample (year 2015, N=292)	All		62.30	20.20	17.50	100		

**Note:** Population information was obtained from (i) the 2012 Manufacturing Industrial Census (MIC) published by National Statistical Office, Ministry of Digital Economy and Society, Thai Government, and (ii) Total Factor Productivity (TFP) Report 2015 published by Office of Industrial Economics, Ministry of Industry, Thai Government.

### 3.3.2 Measures and operationalization

The measurement items in this survey were adapted from established scales in the literature (see Table 2). Some constructs were measured using actual values (e.g., percent of foreign sales, the length of serving international markets, firm size, and firm age).

***Dependent variable - Knowledge transfer:*** Patent data, a popular way to measure knowledge transfer, are usually unavailable in EE firms. In the current study, I utilized multi-item measures capturing (i) transferred knowledge that is used in final products and processes, and (ii) tacit and codified knowledge (Asmussen, Foss, & Pedersen, 2013). The 7-point scale measure of knowledge transfer from Lane, Salk, and Lyles (2001) was employed (see Table 2). Respondent 1 was asked to refer to the time period 2015-16 in order to answer the questions relating to knowledge transfer.

***Explanatory variables – GVC linkages:*** This construct mirrors the extent to which the EE firms are connected with their foreign counterparts. This study followed Sullivan's (1994) degree of internationalization in terms of foreign sales as a percentage of total sales to capture a firm's GVCs linkages. Respondent 1 was asked to refer to the time period 2011-2012 to answer this question. As explained earlier, DOI can be calculated by using the ratio of foreign sales to total sales. The foreign sales usually comprise of export sales and subsidiary sales. For these EE firms, their foreign sales are mainly from direct exports to foreign partners in GVCs as they do not have foreign subsidiary. DOI of these firms thus can be argued to reflect their GVC linkages. Although I believe that this measure best captures the degree of GVCs linkages that exerts pressures on EE firms to conform to the other GVC partners, it should be noted that using this measure unavoidably trades off with the scope aspect of the GVCs linkages, such as the number of countries in which a firm sells its products (Wiersema & Bowen, 2008). Sales information during the time periods 2013-2014 and 2015-2016

were also obtained to check the consistency of this data set. I also collected data on foreign profits as a percentage of total sales (Sullivan, 1994) from respondent 1 for a robustness check.

**Table 2: Constructs and indicators**

Constructs and indicators	Standardized Factor Loading	t-value	R <sup>2</sup> -value
<b>Knowledge transfer</b> ( $\alpha = 0.90$ , CR=0.90, AVE=0.65, SQRT AVE= 0.81) 'To what extent have you learned from your foreign customers or partners in term of'			
1. new technological expertise	0.79	30.34	0.62
2. new marketing expertise	0.80	31.74	0.64
3. product development	0.83	36.10	0.68
4. managerial techniques	0.80	32.35	0.65
5. manufacturing process (Lane, Salk, & Lyles, 2001)	0.81	33.26	0.66
<b>Network embeddedness</b> ( $\alpha = 0.87$ , CR=0.87, AVE=0.69 SQRT AVE= 0.83) 'To what extent have the relationships with top five customers or counterparts led to adaptations in the following areas in order to maintain relationships with them'			
1. product technology	0.85	35.86	0.73
2. production technology	0.78	27.47	0.61
3. overall business conduct (Andersson, Forsgren, & Holm, 2002)	0.85	36.43	0.73
<b>Financial slack</b> ( $\alpha = 0.89$ , CR=0.89, AVE=0.73, SQRT AVE= 0.854) 1. whether the firm's retained earnings have been sufficient for market expansion			
2. whether it has a pool of financial resources that can be used on a discretionary basis	0.83	35.59	0.68
3. whether it is able to secure necessary bank loans (Tan & Peng, 2003)	0.96	58.21	0.93
	0.76	26.89	0.58
<b>Past performance</b> ( $\alpha = 0.86$ , CR=0.85, AVE=0.58, SQRT AVE= 0.76) Performance are measured in term of			
1. the overall performance in term of the firms' sales growth	0.70	19.60	0.49
2. market shares	0.72	21.06	0.52
3. competitive positions	0.70	19.61	0.49
4. the profitability of sales (Aulakh, Rotate, & Teegen, 2000)	0.92	37.82	0.84

*Network embeddedness*: The 7-point scale measure of business and technical adaptation to customers (Andersson, Forsgren, & Holm, 2002, Andersson, Forsgren, & Holm, 2001) was adapted to capture the degree of the EE firm's network embeddedness (see Table 2). Respondent 2 was asked to refer to the time period 2013-2014 to answer the question on network embeddedness.

***Moderator variables*** – *Historical embeddedness*: this study first asked, 'how many years has your company been serving in the international market until the year 2016?' If they could not provide an exact number, this study subsequently asked: "In what year were your company's products sold abroad for the first time?" as previously used by Zahra, Ireland, & Hitt (2000). I then calculated the firms' historical embeddedness during period 2011-2012.

*Financial slack*: Since the argument is based on unabsorbed slack (e.g., free cash flow at the discretion of the firm) rather than absorbed slack (that is, hard-to-redeploy resources such as excess capacity), this study used three-item measures of financial slack (using a 7-point scale) developed by Tan and Peng (2003). Respondent 1 was asked to refer to the time period 2013-2014 to answer the questions.

*Control variables*: Guided by previous studies (e.g., Besharov & Smith, 2014; Lane et al, 2001), this study included the following control variables: *size* (the natural log of an average number of employees in years 2015 and 2016), *age* (the number of years of operation prior to 2016), *past performance*, see Table 2 (measured by four-item measures assessing the overall sales growth, market shares, competitive position, and profitability of sales during the time period 2011-2012) (Aulakh, Rotate, & Teegeen, 2000), and *ownership* (joint venture firms were coded 1, with firms wholly-owned by Thais as the baseline). Additionally, this study coded a high-tech industry (Qian & Li,

2003, Stuart, 2000) dummy and a heavy industry (Rumelt, 1982) dummy<sup>3</sup> with other industries as the baseline. These variables reflect a firm's resources and power that are conceptually related to knowledge transfer.

### **3.4 Analysis and Results**

#### **3.4.1 Measurement model**

Facilitated by MPlus Version 7 (Muthén & Muthén, 2010), a measurement model was created to assess convergent and discriminant validity. The inter-item correlation provided initial evidence of high levels of convergent and discriminant validity as correlation coefficients were higher inside the constructs.

This study tested construct validity using a confirmatory factor analysis (see Table 2). All items loaded significantly on expected constructs ( $p < 0.01$ ). The linearity of the relations between constructs and indicators (R-squared values) was relatively strong in all cases, with the lowest  $R^2$  value being 0.49 or above. The  $t$ -values for all indicators are highly significant (ranging from the lowest 19.60 to 58.21), and their standardized factor loadings were satisfactory (all at 0.70 or above). All fit measures confirmed the validity of all constructs ( $\chi^2=180.40$ ,  $df=83$ ,  $p=0.00$ ;  $\chi^2/df= 2.17$ , CFI=0.96; TLI=0.95; SRMA = 0.04; RMSEA=0.06). Additionally, composite reliability (CR) of all constructs exceeds the 0.7 benchmark (Gerbing & Anderson, 1988). To exemplify, CR of knowledge transfer, network embeddedness, and financial slack are 0.90, 0.87, and 0.89 respectively. Every average variance extracted (AVE) was also greater than the benchmark of 0.50. For example, the AVE for each of knowledge

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<sup>3</sup> In this study, high-technology industries are likely to be state-of-the-art manufacturing facilities, with higher R&D investments, and more intense competition for new product shares (Qian & Li, 2003; Stuart, 2000), whereas with heavy industry the majority of investment is in marketable plant and equipment such as iron and steel, energy, and chemical industries (Rumelt, 1982). In this sample, both Chemicals and the Iron & steel industries were included as heavy industries while firms in automotive parts & motorcycles, machinery & industrial equipment, consumer electronics & electronics components, computer hardware & IT, medical equipment, and telecommunications were classified as high-tech industries.



transfer, network embeddedness, and financial slack were 0.65, 0.69, and 0.73 respectively. These measures demonstrated high convergent validity and reliability.

Following Fornell and Larcker (1981), this study assessed discriminant validity of constructs by examining whether the square root of the AVE of each construct (as shown in the diagonal of Table 3) was greater than the highest correlation between latent variables involving the focal construct. In all cases, the square roots of AVE values are higher than the correlations across all pairs of constructs. Additionally, a series of  $\chi^2$  difference tests between each pair of constructs was performed. All the chi-square differences were highly significant, suggesting strong evidence of discriminant validity for all constructs.

A single-factor procedure test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) was performed to test potential common method bias; however, a single factor could not account for all the variance in this data. This was evidenced by poor model fit of the single factor model ( $\chi^2=1467.932$ ,  $df=90$ ;  $\chi^2/df= 16.31$  CFI=0.49; TLI=0.40; SRMA = 0.15; RMSEA=0.23), indicating that CMV was not an issue in the study.

**Table 3: Correlation matrix and descriptive statistics of measures**

	1	2	3	4	5	6	7	8	9	10	11
1 Knowledge transfer	<b>0.810</b>	-	0.430	-	0.340	-	-	0.440	-	-	-
2 GVC linkages	-0.020	<b>n/a</b>	-	-	-	-	-	-	-	-	-
3 Network embeddedness	.380**	.154**	<b>0.830</b>	-	0.470	-	-	0.480	-	-	-
4 Historical embeddedness (log)	0.066	.176**	-0.069	<b>n/a</b>	-	-	-	-	-	-	-
5 Financial slack	.313**	.230**	.426**	0.023	<b>0.860</b>	-	-	0.470	-	-	-
6 Firm age (log)	0.084	0.046	0.045	.697**	0.063	<b>n/a</b>	-	-	-	-	-
7 Firm size (log)	-0.018	-0.049	-.235**	.197**	-.212**	.207**	<b>n/a</b>	-	-	-	-
8 Past Performance	.359**	-0.100	.376**	0.019	.391**	0.093	-.165**	<b>0.760</b>	-	-	-
9 Ownership	-0.095	-0.040	-.388**	0.076	-.334**	-0.037	.566**	-.300**	<b>n/a</b>	-	-
10 High-Tech industry	-0.071	-.221**	-.324**	0.063	-.382**	0.043	.491**	-.147*	.560**	<b>n/a</b>	-
11 Heavy industry	-0.066	-0.080	-0.079	0.034	-0.033	0.005	.180**	-0.113	.185**	-.152**	<b>n/a</b>
Mean	4.398	42.729	4.675	2.235	3.879	2.813	4.416	3.929	0.380	0.280	0.050
Std. Deviation	1.010	21.578	1.066	0.802	1.407	0.502	1.535	0.929	0.485	0.452	0.228
Skewness	-0.061	0.696	0.389	-0.685	0.179	0.308	0.304	0.012	0.511	0.962	3.933
Kurtosis	0.246	0.801	-0.546	0.972	-0.612	-0.074	0.065	-0.627	-1.750	-1.083	13.560

Notes: The diagonal elements are square roots of the AVE.

The upper right triangle elements are the correlations among the latent variables.

The lower-left triangle elements are correlations among the composite measure (a composite variable for each construct is based on factor score weighted items).

N= 292; N/A = not applicable.

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

### 3.4.2 Hypothesis testing

This study used factor weighted scores to create composite variables and then mean-centered focal variables before creating interaction terms to avoid potential multicollinearity. PROCESS macro for SPSS (Hayes, 2013) was utilized to estimate each mediated path and its moderator in the moderated mediation model concurrently, and to obtain a 95 percent bias-corrected bootstrapped confidence interval (CI), using 5,000 bootstrap samples (Preacher & Hayes, 2008), for the conditional indirect relationship. A check of the variance inflation factor (VIF) indicated no serious multicollinearity. Means, standard deviations (SDs), and correlations are provided at the bottom of Table 3.

Hypothesis 1 proposed the indirect relationship between GVC linkages (Respondent 1) and knowledge transfer (Respondent 1) via network embeddedness (Respondent 2). This study estimated the indirect effect of GVC linkages on knowledge transfer using bias-corrected bootstrapped 95% CIs. As depicted in Table 4, Model 1, the relationship between GVC linkages and network embeddedness and the relationship between network embeddedness and knowledge transfer are both significant ( $B = 0.15$ ,  $p = 0.007$ , and  $B = 0.33$ ,  $p = 0.00$ , respectively). The indirect effect of GVC linkages on knowledge transfer through network embeddedness was significant (indirect effect = 0.05, SE = 0.02, 95% CI [0.015 to 0.098]) since confidence intervals were positive and did not contain zero, whereas the direct effect of GVC linkage on knowledge transfer was non-significant (direct effect =  $-0.05$ , SE = 0.06, 95% CI [ $-0.162$  to 0.06]), indicating that network embeddedness fully mediated the effect of GVC linkage on knowledge transfer. **Therefore, Hypothesis 1 was supported.**

Hypothesis 2 proposed the positive moderating effect of historical embeddedness on the relationship between GVC linkage and network embeddedness. Model 2 in Table 4 shows that the cross-product term (GVC linkages \* level of

historical embeddedness) was significantly associated with network embeddedness ( $B = 0.15, p = 0.003$ ), signifying the moderating effect of historical embeddedness on the relationship between GVC linkages and network embeddedness. I also explored the nature of the interaction by calculating the marginal effect (ME) of GVC linkages on network embeddedness at different values of historical embeddedness (Figure 2). The ME was significantly stronger when historical embeddedness was above 2.066, and 67.81 percent of the sample observations were in the range where the ME is significant.

I further explored the conditional indirect effect of GVC linkages on knowledge transfer via network embeddedness with the presence of historical embeddedness as the first-stage moderator. Table 5 illustrates the estimate and bias-corrected bootstrapped 95 percent CIs (5000 bootstrap samples) for the conditional indirect effects at  $\pm 1$  standard deviation of the moderators. As illustrated, the conditional indirect effect of GVC linkages on knowledge transfer was significant at a high level of historical embeddedness (i.e., at mean + 1 SD; indirect effect = 0.082.0, SE = 0.028.0, 95% CI [0.036 to 0.150]), but not at low levels of historical embeddedness (i.e., at mean -1 SD; indirect effect = -0.003.0, SE = 0.028.0, 95% CI [-0.060 to 0.052]). We can be 95 percent confident that the indirect effects of GVC linkages on knowledge transfer via network embeddedness increased with increased historical embeddedness. **Hypothesis 2 was, therefore, supported.**

To test the moderating effect as stipulated in Hypothesis 3, I assessed whether the strength of the relationship between network embeddedness and knowledge transfer toward EE firms depended on the level of financial slack. Model 2 (Table 4) indicates that the cross-product term of network embeddedness and financial slack was significantly associated with knowledge transfer ( $B = 0.16, p = 0.003$ ). Figure 3 also illustrates that the relationship between network embeddedness and knowledge transfer became significantly stronger when values of financial slack were above 2.891 and

more than 77.40 percent of the sample observations were in the range where the ME of network embeddedness on knowledge transfer was significant.

I further assessed the conditional indirect effect of GVC linkages on knowledge transfer with the presence of financial slack as the second-stage moderator using bias-corrected bootstrapped 95 per cent CI (5000 bootstrap samples) for the conditional indirect effects at  $\pm 1$  standard deviation of the moderators. As illustrated in Table 5, the conditional indirect effect of GVC linkages on knowledge transfer via network embeddedness was significant when financial slack was high (i.e., at mean + 1 SD; indirect effect = 0.063, SE = 0.028, 95% CI [0.015 to 0.125], but was not significant when financial slack was low (i.e., at mean - 1 SD; indirect effect = 0.016, SE = 0.018, 95% CI [-0.013 to 0.060]). **Therefore, Hypothesis 3 was supported.**

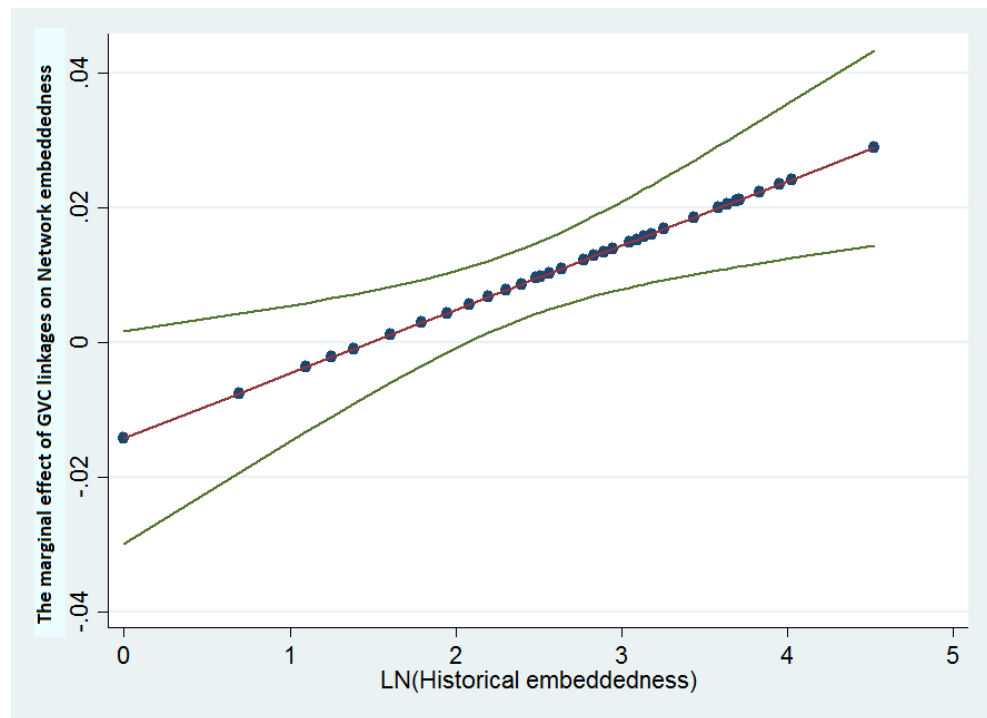
This study also considered the presence of both historical embeddedness and financial slack concurrently with the first- and second-stage moderators, respectively. The conditional indirect effect of GVC linkages on knowledge transfer via network embeddedness was significant since both historical embeddedness and financial slack were high (i.e., at mean + 1 SD; indirect effect = 0.131, SE = 0.037, 95% CI [0.072 to 0.221]), but were not significant when both moderators were low (i.e., at mean - 1 SD; indirect effect = -0.001, SE = 0.015, 95% CI [-0.044 to 0.023]). Therefore, the presence of both historical embeddedness and financial slack together as moderators increased the magnitude of knowledge transfer toward EE firms.

**Table 4: Regression results**

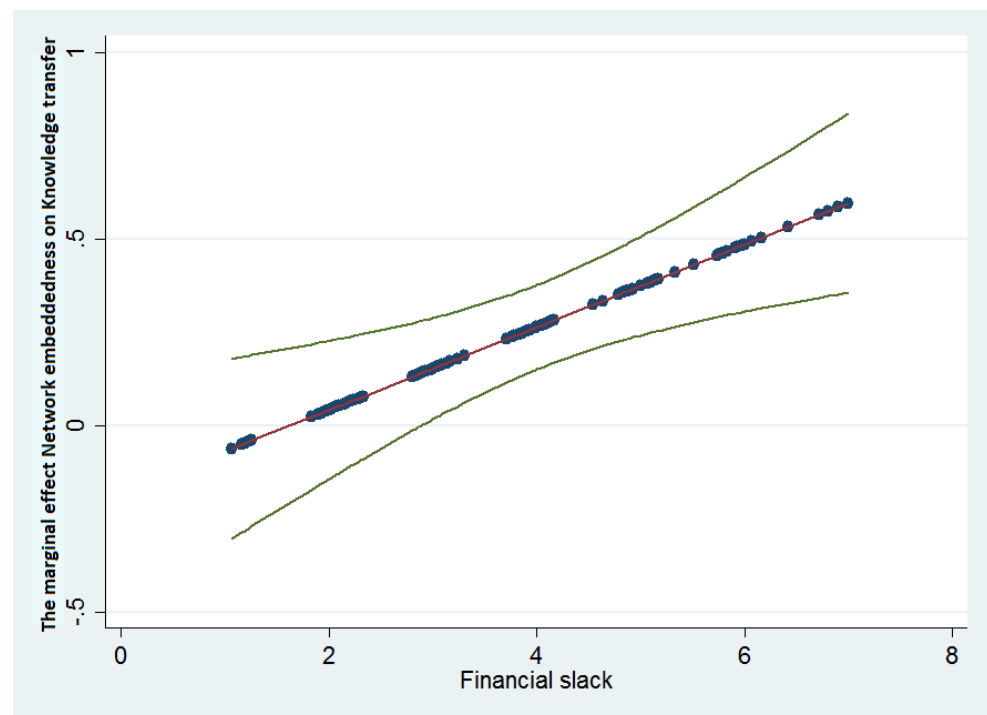
	Model 1 (Mediation)				Model 2 (Moderated mediation)				Model 3 (Robustness test)			
	Net.Embed		Know.Transfer		Net.Embed		Know.Transfer		Net.Embed		Know.Transfer	
	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>
<b>Constant</b>	0.00(0.05)	1.000	0.00(0.05)	1.000	-0.03(0.00)	0.593	-0.07(0.06)	0.217	-0.02(0.05)	0.633	-0.07(0.06)	0.214
<b>Controls</b>												
Joint venture ownership	-0.22(0.07)	0.002	0.11(0.08)	0.165	-0.22(0.07)	0.002	0.13(0.07)	0.077	-0.23(0.07)	0.002	0.13(0.07)	0.096
Past performance	0.30(0.05)	0.000	0.26(0.06)	0.000	0.31(0.05)	0.000	0.20(0.06)	0.001	0.32(0.05)	0.000	0.21(0.06)	0.001
Firm age	0.00(0.05)	0.930	0.04(0.06)	0.459	0.07(0.07)	0.338	0.02(0.04)	0.670	0.07(0.07)	0.335	0.02(0.05)	0.731
Firm size	0.01(0.07)	0.830	0.06(0.07)	0.416	0.02(0.07)	0.740	0.05(0.07)	0.485	0.02(0.07)	0.816	0.05(0.07)	0.504
High-tech industry	-0.13(0.07)	0.063	-0.03(0.07)	0.640	-0.12(0.07)	0.076	-0.03(0.07)	0.667	-0.13(0.07)	0.063	-0.02(0.07)	0.798
Heavy industry	-0.01(0.06)	0.803	-0.05(0.06)	0.395	0.00(0.06)	0.954	-0.06(0.06)	0.309	-0.01(0.06)	0.925	-0.05(0.06)	0.385
<b>Independent variable</b>												
GVC linkages	0.15(0.05)	0.007	-0.05(0.06)	0.365	0.14(0.05)	0.009	-0.08(0.06)	0.157	0.13(0.05)	0.016	-0.03(0.06)	0.566
<b>Mediator variable</b>												
Network embeddedness	-	-	0.33(0.06)	0.000	-	-	0.27(0.06)	0.000	-		0.27(0.06)	0.000
<b>Moderating variables</b>												
Historical embeddedness	-	-	-	-	-0.12(0.07)	0.095	-	-	-0.11(0.7)	0.145	-	-
Financial slack	-	-	-	-	-	-	0.17(0.06)	0.009	-	-	0.16(0.06)	0.015
<b>Interaction terms</b>												
GVCLink * HistEmb	-	-	-	-	0.15(0.05)	0.003	-	-	0.17(0.05)	0.001	-	-
NetEmbed * Fin.Slack	-	-	-	-	-	-	0.16(0.05)	0.003	-	-	0.17(0.05)	0.003
<b>Model summary</b>												
R2	0.264		0.216		0.3		0.26		0.301		0.255	
Overall model F (F)	14.56	0.000	9.74	0.000	13.4	0.000	9.86	0.000	13.46	0.000	9.64	0.000
df	(-7,284)		(-8,283)		(-9,282)		(-10,281)		(-9,282)		(-10,281)	

**Note:** Dependent variable: Knowledge Transfer; N=292. The beta values ( $\beta$ s) in the table are standardized coefficients.

**Figure 2: The marginal effect of GVC linkages on network embeddedness at value of historical embeddedness**



**Figure 3: The marginal effect of network embeddedness on knowledge transfer at value of financial slack**



**Table 5: Estimates and bias-corrected bootstrapped 95 percent confidence intervals for the conditional indirect effects at  $\pm 1$  standard deviation of the moderators**

Moderator	Conditional indirect effect of GVC linkages on Knowledge transfer via Network embeddedness		
	Level of estimate	<i>B (SE)<sup>a</sup></i>	CI
Historical Embeddedness	-1 SD	-0.003(0.028)	[-0.060, 0.052]
	+1 SD	0.082(0.028)	[0.036, 0.150]
Financial slack	-1 SD	0.016(0.018)	[-0.013, 0.060]
	+1 SD	0.063(0.028)	[0.015, 0.125]

Note: CI = confident interval. <sup>a</sup> Bootstrapped estimates for the standard error (*SE*) are presented.

### 3.4.3 Additional analyses and robustness tests

An alternative variable for focal construct was further tested (see Table 4 Model 3). Foreign profits as a percentage of total sales was utilized as an alternative variable of the GVC linkages. As shown in Table 4 Model 3, all the hypothesized relationships remained significant.

I also ran another additional analysis in a separate model where I tested the moderating effect of both historical embeddedness and financial slack at the first and second stage of the proposed model. While the first stage moderating effect of historical embeddedness and the second stage moderating effect of financial slack both remain statistically significant ( $B=.015, p=0.003$ ;  $B=.016, p=0.03$  respectively), the results indicated that (i) historical embeddedness had no second stage moderating effect, and (ii) financial slack had no first stage moderating effect ( $B=-.002, p=.074$ ;  $B=-.005, p=.040$  respectively).

To further test the robustness of the focal moderators (i.e., historical embeddedness and financial slack), this study followed multiple-group SEM analysis procedures, as suggested by Song, Droge, Hanvanich, and Calantone (2005). The multi-group analyses allowed us to test whether mediated paths should be allowed to vary in strength between sub-groups. Table 6, Model 1, includes the baseline model where I



imposed a certain constraint on the control variables, factor loadings, and the embeddedness–knowledge transfer path, whereas the GVC linkages–network embeddedness path was allowed to vary between sub-groups using the median value of historical embeddedness. For Model 2, I further imposed a constraint on the baseline model against the hypothesized moderating effect of historical embeddedness (Hypothesis 2). This allowed to consider whether it was significantly worse than the baseline model in which the GVC linkages–network embeddedness path was allowed to vary in strength depending on historical embeddedness. The significant result of the model chi-square difference test of Model 2 ( $\Delta \chi^2_{(1)} = 4.57, p < 0.05$ ) indicated that the baseline model fitted the data better. Additionally, the coefficient of the GVC linkages–network embeddedness path in the baseline model was significantly larger ( $0.27 > 0.01$ ) for firms with higher historical embeddedness than for those with lower experience. This was consistent with the previous analysis using SPSS PROCESS macro for Hypothesis 2.

I used similar procedures to test the moderating effect of financial slack. In Table 7, Model 1 (the baseline model), I constrained for control variables, factor loadings, and the GVC linkages–network embeddedness path, but allowed network embeddedness–knowledge transfer paths to vary between sub-groups (using Quartile 1 versus Quartile 4 of financial slack values). Model 2 imposed a constraint on Model 1 against the hypothesized moderating effect of financial slack (Hypothesis 3). Given the significant result of the model chi-square difference test of Model 2 ( $\Delta \chi^2_{(1)} = 4.87, p < 0.05$ ), which signified the difference in strength of the network embeddedness–knowledge transfer path, I compared the coefficients of this path in the baseline model and found that this path coefficient was larger for firms with high financial slack (0.65) than for those with low financial slack (0.15). This analysis was also consistent with the previous analysis for Hypothesis 3.

Overall, the results of multi-group analyses provided additional evidence to support both Hypotheses 2 and 3. The mediated path between the GVC linkages and knowledge transfer via network embeddedness was stronger when the focal moderators (i.e., historical embeddedness and financial slack) were high as opposed to low. Additionally, the details shown in Tables 6 and 7 also confirmed the moderation of historical embeddedness on the first path from the GVC linkages toward network embeddedness, and the moderation of financial slack on the second path (that is, the network embeddedness–knowledge transfer path).

**Table 6: Multi-group SEM analysis for the moderating effect of historical embeddedness**

	Model 1: Net.Embed path constrained	Model 2: Fully constrained
<b>Low historical embeddedness</b>		
GVC linkages–Net.Embed	0.01(n.s.)	0.19**
Net.Embed –Knowledge transfer	0.33***	0.33***
<b>High historical embeddedness</b>		
GVC linkages– Net.Embed	0.27***	0.19**
Net.Embed –Knowledge transfer	0.33***	0.33***
Chi-square ( $\chi^2$ )	455.52	460.10
<i>df</i>	245	246
$\Delta \chi^2$		4.57
$\Delta df$		1
<i>p</i> -value		0.03

Note: Sub-groups divided by median (n for low group = 126; n for high group = 166); \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; control variables are excluded from this table for brevity.

**Table 7: Multi-group SEM analysis for the moderating effect of financial slack**

	Model 1: GVC linkages path constrained	Model 2: Fully constrained
<b>Low Financial Slack</b>		
GVC linkages– Net.Embed	0.11(n.s.)	0.10(n.s.)
Net.Embed –Knowledge transfer	0.15(n.s.)	0.45**
<b>High Financial Slack</b>		
GVC linkages– Net.Embed	0.110(n.s.)	0.104(n.s.)
Net.Embed –Knowledge transfer	0.65***	0.45***
Chi-square ( $\chi^2$ )	354.57	359.44
<i>df</i>	245	246
$\Delta \chi^2$		4.87
$\Delta df$		1
<i>p</i> -value		0.03

Note: Sub-groups divided by Quartile 1 (n=75) versus Quartile 4 (n= 80); \*\*\*  $p < 0.001$ ; control variables are excluded from this table for brevity.

### **3.5 Discussion and Conclusion**

This study examined the linkage effect on the benefits of knowledge transfer toward EE firms in the GVC setting. I have illustrated that network embeddedness allows technologically-laggard firms from an emerging economy (Thailand, in this case) to gain legitimate status, which is important for their access to the learning resources available from other GVC members. This study also identified that by increasing their relationship-specific investment, EE firms' historical embeddedness moderated the indirect impact of GVC linkages on knowledge transfer toward them via network embeddedness. I further found financial slack facilitated EE firms' learning from working relationships with resourceful GVC partners. Together, both historical embeddedness and financial slack help strengthen the network embeddedness effect on knowledge transfer.

#### **3.5.1 Theoretical contributions**

This study makes three key contributions. First, this study advances the GVC linkage debate and the factors driving successful knowledge transfer during the internationalization process of EE firms. This study explicated the LLL paradigm (Mathews, 2006) by considering the crucial role of network embeddedness in explaining how learning from global linkages occurs. Network embeddedness is important in the sense that it enables the completed linkage between advanced foreign firms and the technologically laggard firms within GVC. It further improves the legitimate status of less advanced firms, thereby allowing them to establish working relationships with more advanced members of the GVC and subsequently gain learning benefits. This study confirms that network embeddedness is particularly important for EE firms operating as suppliers to other advanced GVC partners, given their perceived lower legitimate status in GVC linkages and their motivation to maintain access to knowledge sources not available in their home markets.

Second, I integrate embeddedness and legitimacy perspectives and explains the variation in knowledge transmitted to EE firms participating in GVCs. This study highlights that, by changing and conforming to the GVC practices, network embeddedness allows technologically-laggard firms to participate as legitimate members and to benefit from the resources of the other members (Dacin, Oliver, & Roy, 2007, Oliver, 1997). The notion of embeddedness emphasizes the importance of transformation or adaptation for EE firms to be congruent with other advanced members and benefit from their global linkages. This view offers a new perspective on how firms learn in that it emphasizes the relationship-specific investment undertaken by technologically-laggard firms to reach a congruity threshold that facilitates their learning from linkages with GVC partners. Previous research (e.g., Lane & Lubatkin, 1998) also suggests that partner similarity (i.e., (i) knowledge base or *know-what*, (ii) organizational structure and processes or *know-how*, and (iii) dominant logic or preferences on how the partner applies knowledge or *know-why*) determines a firm's ability to learn from international partners. Network embeddedness is thus an important process undertaken by technologically-laggard firms to enable inter-firm learning in the GVC setting.

Third, this study links resource dependence logic to technologically-laggard firms in the GVC and predicts their network embeddedness and its impact on knowledge transfer. The results support the argument that the source of pressure to change and conform emerges from the extent to which EE firms are dependent on or linked to other resource-providing GVC members. This study also enriches embeddedness literature that states, (i) the variation in network embeddedness is due to the different levels of historical embeddedness, and (ii) the variation of the network embeddedness effect on the knowledge transfer benefit toward firms results from the

different levels of slack resource dedicated to strategic activities that facilitate EE firms' learning.

Overall, this study contributes empirical evidence to advance the current understanding of the impact of GVCs on the development of firms from emerging economies and offers mechanisms from network and legitimacy perspectives to explain how EE firms learn in the context of the GVC.

### **3.5.2 Strategic implications**

Learning is essential to the successful internationalization of EE firms. To managers of technologically-laggard firms, this study has demonstrated the strategic implications of network embeddedness in the GVC context, which is crucial to the quality of EE firms' learning through global linkages with GVC partners. This process is particularly important for knowledge transmission from more advanced partners toward EE firms. Although a knowledge gap incentivizes EE firms to undertake resource linkages with their foreign counterparts, their access to the knowledge resources available is hampered if they do not have network embeddedness to participate as insiders or legitimate members within GVC. Network embeddedness achieved by adapting their behaviors and conforming to GVC norms and values can create a congruity between EE firms and their advanced GVC partners, while legitimate status associated with embeddedness enables EE firms to establish successful working relationships that facilitate the inflow of learning resources to them. The congruity between EE firms and other GVC partners also helps form a context in which EE firms become more capable of understanding their partners and thus they can gain new knowledge more effectively (Darr & Kurtzberg, 2000, Lane & Lubatkin, 1998). The costs of coordination may also reduce because network embeddedness promotes inter-organizational understanding and exchange of information (Burchell & Wilkinson, 1997, Darr & Kurtzberg, 2000). Further, network embeddedness provides the

foundation for EE firms to seek common solutions to the problems that other GVC partners have also experienced, since both parties adopt the same practices (Asmussen, Foss, & Pedersen, 2013). Without network embeddedness, learning new knowledge from GVC linkages will be challenging for technologically-laggard firms because their personnel may not realize the value of external knowledge or possess the necessary complementary knowledge and skills to exploit it (Asmussen, Foss, & Pedersen, 2013). Therefore, lacking network embeddedness might result in high knowledge transaction costs (e.g., difficulty in recognizing and understanding knowledge, and more effort and expenses required for decoding of external knowledge). Hence, EE firms' ability to transform or adapt their operations to be congruent with more advanced GVC partners can maximize the magnitude of the learning and knowledge transmitted to them.

In addition, because having more historical embeddedness can amplify network embeddedness, this study suggests the born-global approach (Knight & Cavusgil, 2004) may not always be an appropriate strategy if the EE firms do not possess a sufficient level of historical embeddedness. A possible remedy to a lack of historical embeddedness could be to acquire human resources having significant duration exposure to GVC settings. This could subsequently elevate the EE firms' network embeddedness within the GVC. Lastly, as financial slack can facilitate learning from working relationships with GVC partners, it is important that EE firms allocate financial slack to fuel internal adaptation and/or transformation to facilitate their learning. Accessing and accumulating financial slack through various channels are essential in this process.

### **3.5.3 Implications to the Southeast Asian region and policy makers**

Although Southeast Asian countries diverge significantly in their level of industrial development, economies such as Thailand, Vietnam, Indonesia, and the Philippines are similar with regard to their high level of GVC participation. After

decades of GVC participation, those countries remain low-cost and labor-intensive production locations for multinational organizations. Catching up and upgrading are therefore common challenges for firms in this region (Pietrobelli & Saliola, 2008, Saliola & Zanfei, 2009, Van Pham & Petersen, 2010). These circumstances make the issue of learning by EE firms a key concern for policy makers. This study provides important insights, especially for the Southeast Asian region. It highlights that there is a congruity threshold (e.g., adapting and complying with the overall GVC practices and operations) for learning and knowledge transmission to occur within Southeast Asian economies. The general recommendation is that industrial development policies should consider providing support to EE firms to reach a congruity threshold. This may include support for firms to become familiar with and adapt to the practices and standards of networked production systems in GVCs, which are arguably distinct from the typical domestic methods of operations. Additionally, developing policies to allow for ease of access to financial resources could facilitate better learning between EE firms and their global partners, which in turn allows greater knowledge transfer benefits into the region.

### **3.5.4 Limitations and future research directions**

While the findings might be transferable to technologically-laggard firms and valid for learning firms within different GVC settings (i.e. not necessarily limited to EE firms), the study has several limitations that warrant further attention. First, the theorizing in this study was predominantly drawn from embeddedness and legitimacy perspectives. Other theoretical approaches may generate interesting hypotheses that could be tested. Second, although this study used multiple respondents and actual data when possible, the research was limited in that some variables were obtained in the form of the perceptions of two firm executives. Some variables were based on retrospective data (e.g., asking participants to refer to the period of 2011–2012 and 2013–2014) when the respondents answered the survey questions. This study also did



not obtain data in dyads (from both EE firms and international partners). Third, although I proposed to use DOI as the source of pressure for EE firms to conform to GVC practices, DOI itself may also capture direct sales to end users in foreign market, thus offering a limited representation of pressure EE firms receive within GVCs. Additionally, future research might extend this work to other emerging economies or test it within a particular industry or institutional context.

Overall, this study enriches the contemporary discussion about the learning of EE firms in the GVC setting, where embeddedness and legitimacy status play an essential role in knowledge transfer. This current research has offered a new perspective for future scholarly pursuits that focus on the catching up of technologically-laggard firms in different GVC contexts. In addition, learner firms in GVCs may develop further network embeddedness in different ways that have not been considered here. Future research addressing the impact of linkages on knowledge transfer benefits by using alternative theoretical constructs has the potential to advance knowledge about GVCs.

Scholars might also consider the diminishing return of network embeddedness. One might expect that, as technologically-laggard firms accumulate a certain level of embeddedness, adaptation and conformity to create embeddedness could become less important for their learning. In such circumstances, it would be valuable to examine whether network embeddedness still provides benefits in terms of knowledge transfer toward them. If this is the case, would EE firms rely less on embeddedness and instead invest in riskier activities (e.g., conduct their own R&D) in the long term? What is the optimum level of embeddedness versus EE firms' own R&D efforts? Will the partners perceive that there is a level above which congruent knowledge and practices are harmful?

Further, the degree of network embeddedness could be considered in its interaction with other industry environments. For instance, one might expect that,

compared with highly dynamic industries, EE firms enjoying high profit may not want to adapt or change in accordance with their GVC partners. Finally, given the importance of congruity threshold, the questions related to the knowledge congruity between foreign firms and EE firms could add additional insights to our understanding of the learning conditions within GVC.

## CHAPTER 4

### **Study 2: Knowledge Absorption by Emerging Economy Firms from Global Value Chains: The Parallel Learning Pathways and the Moderating Role of Knowledge Contingencies**

**Research summary:** This study examines the process model of absorptive capacity by which emerging economy firms achieve learning through global value chains. Building upon the absorptive capacity and knowledge transfer literature, this study extends Todorova and Durisin's (2007) conceptual work by identifying two types of absorptive capacity, which are assimilation-based and transformation-based, as parallel learning pathways, and argue that the learning firm vacillates between these parallel processes depending on the specificity and the depth of knowledge transmitted within the global value chains. this study proposes assimilation and transformation mediate the relationship between knowledge acquisition and knowledge exploitation in parallel, and these mediated pathways are contingent upon both the specificity and the depth of knowledge. Data from 292 Thai suppliers partaking in global value chains support the hypothesized moderated-mediation relationships. The model highlights key knowledge characteristics as the contingencies which determine the way in which learning firms respond to external knowledge, as well as the effectiveness of the two processes of absorptive capacity on knowledge exploitation. This study contributes novel empirical evidence regarding the parallel learning pathways and their contingent factors, and clarifies how learning firms absorb external knowledge that is incongruent with their existing knowledge stock.

**Keywords:** Absorptive capacity; knowledge transfer; global value chain; emerging economy firms

**Note:** The earlier versions of this study were presented in three conferences. Please refer to Publications Arising from the Thesis (item 2, 3 and 5).

## 4.1 Introduction

EE firms actively seek technological, managerial, and market knowledge from more advanced and resourceful foreign business partners through international business linkages (Mathews, 2006, Zahra, Ireland, & Hitt, 2000). To date, scholars have examined GVCs as important forms of such linkages which will enable learning by EE firms (Alcacer & Oxley, 2014, Corredoira & McDermott, 2014, Khan, Shenkar, & Lew, 2015, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, McDermott & Corredoira, 2010, Mudambi, 2008).

However, having GVC linkages does not necessarily lead to positive learning outcomes due to the heterogeneities in the capabilities of EE firms to absorb external knowledge, which leads to variation in their learning outcomes across different sectors (Lema, Quadros, & Schmitz, 2015), industries, and countries (Altenburg, Schmitz, & Stamm, 2008, Buckley & Strange, 2015). Further, a firm's knowledge stock does not necessarily grow cumulatively, as new knowledge may be incongruent with existing knowledge and therefore cannot be readily assimilated (Asmussen, Foss, & Pedersen, 2013). This incongruity issue is particularly relevant for EE firms seeking novel external knowledge that may not be fully understood and assimilated directly by them (Awate, Larsen, & Mudambi, 2012, Cuervo-Cazurra & Rui, 2017). Because of these challenges, our understanding on the processes by which EE firms respond to the heterogeneous knowledge transmitted in GVCs remains incomplete. Specifically, this study asks, *through what processes and under what conditions can EE firms achieve learning through GVC linkages?*

The literature on absorptive capacity (ACAP) and knowledge transfer provide a robust theoretical foundation for this inquiry, as they address the processes by which a learning firm can benefit from external knowledge, albeit with different focuses. On the one hand, ACAP emphasizes the internal processes through which firms acquire and

utilize external knowledge (Cohen & Levinthal, 1990, Jansen, Van den Bosch, & Volberda, 2005, Lane & Lubatkin, 1998). Specifically, as noted by Zahra and George (2002), ACAP involves a series of sequentially executed sub-processes, which are knowledge acquisition, assimilation, transformation, and eventually exploitation. On the other hand, the literature on knowledge transfer focuses on the learning challenges associated with different external knowledge (Asmussen, Foss, & Pedersen, 2013). Depending on the nature of the knowledge, the learning firm may respond to the external knowledge by assimilation [that is, incorporating external knowledge into their existing knowledge stock (Posner, Strike, Hewson, & Gertzog, 1982)], or by accommodation [which requires the learning firm to alter some of its existing knowledge structures (Dole & Sinatra, 1998, Vosniadou & Brewer, 1987)]. As a result, unlike the sequential ACAP model, the knowledge transfer perspective suggests two parallel processes that a firm can undertake in order to benefit from external knowledge sources.

The different focuses of ACAP and knowledge transfer literature are complementary to each other in providing an integrated understanding on the connection between the internal (ACAP sub-processes) and external (external knowledge characteristics) elements of the learning process. Todorova and Durisin's (2007) reconceptualization of the ACAP model also gives the impression that the relationship between the acquisition and exploitation sub-processes of ACAP is mediated either by assimilation or transformation as two parallel pathways. Yet it remains unclear as to what drives the response/selection and what moderates the relative effectiveness of the two pathways in a specific learning context. Analyzing the moderators of the parallel pathways of ACAP in the GVC setting allows a renewed understanding on the conditions influencing the relationships among ACAP sub-components. It also reveals the different knowledge-processing mechanisms EE firms

utilize to absorb knowledge, especially in GVC linkages where the knowledge transmitted is specific to the partner (knowledge source in GVCs) and requires in-depth understanding to utilize that knowledge.

As an extension of Todorova and Durisin's (2007) conceptual work, this study extends the current understanding about the parallel pathways in the ACAP model by highlighting the contingencies influencing the salience of the pathways through which EE firms learn from their GVC linkages. Following knowledge transfer literature regarding the implications of the nature of the acquired knowledge on the ways in which a learning firm responds to it (Asmussen, Foss, & Pedersen, 2013, Subramaniam & Venkatraman, 2001, Szulanski, Ringov, & Jensen, 2016), the extended ACAP model posits that the key characteristics of the knowledge sought, namely knowledge specificity and knowledge depth, moderate the two mediated ACAP pathways. this study argues that knowledge specificity influences which pathway a learning firm will respond to or select, as the more specific the knowledge to the partner firm (knowledge source), the more the learning firm needs to transform its existing knowledge structures to accommodate the new knowledge, as simply trying to assimilate the knowledge is likely to fail due to limited relevance and congruity of source-specific knowledge for the learning firm (Cohen & Levinthal, 1990). In addition, the knowledge EE firms gain from GVCs can vary in depth (Gereffi, Humphrey, & Sturgeon, 2005, Saliola & Zanfei, 2009), which can influence the effectiveness of the two ACAP pathways. The depth of knowledge reaches the core competencies (Bierly & Chakrabarti, 1996) of the learning firm and is more beneficial for the transformation process in upgrading core knowledge, rather than the assimilation process which seeks to complement and strengthen the existing dominant logic but may induce logic conflicts (Prahalad & Bettis, 1986).

Empirically, this study tested the hypothesized relationship with multi-respondent survey data from 292 Thai manufacturing firms partaking in GVCs and from

the results make three main contributions. First, while the reconceptualization of ACAP by Todorova and Durisin (2007) indicates that ACAP is not a single sequentially executed process but rather involves parallel learning pathways, what determines the relative prominence of one of the two pathways over the other in a given learning context was unresolved. To address this gap, this study took into account two key knowledge characteristics that can influence the responses of firms to external knowledge and their associated learning pathways. This study thus further answered several calls for scholarly attention to the role of knowledge attributes in the ACAP components and processes (Jansen, Van den Bosch, & Volberda, 2005, Volberda, Foss, & Lyles, 2010). Second, there exists a paradoxical view that external knowledge of greater value is often distant and unfamiliar (Vasudeva & Anand, 2011), yet the abilities of firms to absorb external knowledge is a function of the similarity and overlap between the external knowledge and the existing knowledge stock of the learning firm (Darr & Kurtzberg, 2000, Lane & Lubatkin, 1998). The model shows that, given the contingencies of parallel pathways of learning, firms can achieve a match/fit between knowledge characteristics and their information-processing processes. This match determines how effectively the acquired knowledge can be exploited (Subramaniam & Venkatraman, 2001). Third, this study enriched the ACAP process model by applying it to the context of learning variations of EE firms from GVC linkages. The findings highlight transformation as a crucial internal process enabling inter-firm learning capabilities, especially when the learning firm possesses an uneven level of knowledge.

## **4.2 Theory and Hypotheses**

### **4.2.1 Absorptive capacity**

Cohen and Levinthal (1990) introduced ACAP as the variation firms have in their capabilities to recognize the value of new external knowledge, assimilate it, and then apply it to their own commercial ends. Initially, this concept mainly focused on a



firm's R&D investment that determines its ability to absorb external knowledge (Cohen & Levinthal, 1990, Cohen & Levinthal, 1994, Cohen & Levinthal, 1989). Subsequently, it has been debated and modified into three major perspectives, namely, (i) partner similarity/overlap in terms of knowledge base, structure/process, and logic/preferences (Dyer & Singh, 1998, Lane & Lubatkin, 1998, Lane, Salk, & Lyles, 2001), (ii) learning processes that constitute a firm's capacity to create, extend, and modify its resource base for sustainable competitive advantage (Jansen, Van den Bosch, & Volberda, 2005, Lane, Koka, & Pathak, 2006, Todorova & Durisin, 2007, Zahra & George, 2002, Zobel, 2017), and, more recently, (iii) the micro-foundation perspective which emphasizes how individual characteristics contribute to a firm's ACAP (Lewin, Massini, & Peeters, 2011, Volberda, Foss, & Lyles, 2010, Yao & Chang, 2017). In the context of GVCs, the uneven level of knowledge stock between technologically-laggard EE firms and technologically-advanced foreign partners makes it less likely that the partner similarity perspective will be able to explain an EE firm's learning, whereas the linkages between EE firms and foreign firms is less relevant to the micro-foundation perspective of ACAP. Rather, the learning process perspective seems to offer insights into how EE firms leverage distant and incongruent knowledge from GVC linkages into their own operations.

Zahra and George's (2002) reconceptualization of ACAP is a widely applied concept in strategy and management research due to its innovative ability to classify sub-components of ACAP, and to have them relate to the broader dynamic capabilities perspective in explaining a firm's ability to gain and sustain competitive advantages. These scholars demonstrated ACAP as a series of sequentially executed sub-processes, which are knowledge acquisition (i.e., a firm's routines and processes to identify and gather external knowledge that is critical and relevant to its operations), assimilation (i.e., processes allowing the firm to promptly include, communicate, and interpret the

acquired information (Flatten, Greve, & Brettel, 2011)), transformation (i.e., processes to develop, update, and refine underlying routines in order to combine existing and newly assimilated knowledge), and exploitation (i.e., a firm's routines to apply and utilize new external knowledge, which in turn helps it refine and/or create existing or new competencies for its operations). In this model, the acquired knowledge is usually context-specific, and this delays outsiders from comprehending it. Transformation is thus required after assimilation to facilitate the combination of pre-existing and already-assimilated knowledge in order for the new knowledge to be utilized in the exploitation process. Nevertheless, more recent reconceptualization regards transformation and assimilation as parallel pathways rather than sequential processes, which will be discussed later.

#### **4.2.2 Knowledge transfer**

Knowledge transfer literature focuses on the ways firms deal with various types of external knowledge. It suggests that a firm may respond to external knowledge differently depending on the congruity of the acquired knowledge and its existing knowledge stock. Building on Schulz (2003), Asmussen, Foss, and Pedersen (2013) defined knowledge congruity as the cognitive fit between the knowledge stock of the focal unit and the recipients of that knowledge. If the acquired knowledge is congruous with the cognitive structure of the learning firm, the decoding and encoding of such knowledge are unlikely to result in costly misapplication. Thus, the knowledge and its value can be subsequently realized and utilized by the firm (Foss, 2007, Reagans & McEvily, 2003).

Depending on the congruity of the external knowledge, the learning firm may respond to the acquired knowledge differently by using either assimilation or accommodation processes (Asmussen, Foss, & Pedersen, 2013). *Assimilation* is a process where the learning firm incorporates the external knowledge acquired into their

pre-existing cognitive and knowledge structure, without challenging their own structure when doing so (Posner, Strike, Hewson, & Gertzog, 1982). Assimilation processes will slightly alter the set of congruent knowledge to fit the existing knowledge structure in order to exploit its value. On the other hand, through the process of *accommodating knowledge* via *transformation* the learning firm alters some of its existing cognitive and knowledge structures (Dole & Sinatra, 1998, Vosniadou & Brewer, 1987) to better decode and exploit the incongruent knowledge. Doing so allows the learning firm to reinterpret or even discard its pre-existing knowledge in order to better realize the benefits of the new knowledge.

Therefore, the nature of the knowledge acquired has important implications for the learning firm and the way it responds to that knowledge (Asmussen, Foss, & Pedersen, 2013, Subramaniam & Venkatraman, 2001, Szulanski, Ringov, & Jensen, 2016). However, thus far, the nature of knowledge has not been considered in the ACAP model. This study aims to incorporate knowledge characteristics in the recent development of the ACAP model in order to understand how firms utilize different knowledge-processing mechanisms when they acquire heterogeneous knowledge.

#### **4.2.3 Parallel pathways of ACAP: Transformation versus assimilation**

Although ACAP and knowledge transfer form separate literature streams, ACAP research has recognized alternative pathways through which acquired knowledge is processed. Aligning with the two learning processes dominantly used in the cognitive science of individual learning (Marshall, 1995, Piaget & Cook, 1952), Todorova and Durisin (2007) reconceptualized Zahra and George's (2002) sequential ACAP model and regarded accommodation via a transformation process as an alternative, rather than subsequent, process to assimilation, as the process that occurs with the existing cognitive structure for assimilation is distinct from the process that occurs for transformation. They further discussed that the operative principles of the assimilation

and transformation pathways are complex. For example, firms may not be able to clearly distinguish knowledge that can be assimilated by their existing cognitive and knowledge structures from that which requires structural changes. It is likely that firms move some knowledge from assimilation to transformation after a series of failed assimilation processes. Alternatively, over time, the refined cognitive and knowledge structure may repeatedly regress and/or revert to learning through the firm's prior knowledge structure, and thereby the firm will move back to the assimilation way of learning. A firm's learning process is, therefore, highlighted by Todorova and Durisin (2007) as a process where the firm moves back and forth between assimilation and transformation. In my view, the way a learning firm keeps moving knowledge pieces between the two pathways indicates that there is a parallel learning process in dealing with knowledge acquired externally. The notion of parallel pathways ACAP is also consistent with Patterson and Ambrosini's (2015) case studies on the British biotech industry. Specifically, their results do not follow the ACAP configuration proposed by Zahra and George (2002), but instead propose that assimilation capabilities are parallel with the process of transforming knowledge in the operations of firms.

In applying the parallel pathways of the ACAP model in the context of learning firms from emerging economies, this study proposes that the first learning pathway is through the transformation process. While previous research stipulates that learning is based on similarity/overlap knowledge stock (Darr & Kurtzberg, 2000, Lane & Lubatkin, 1998, Lane, Salk, & Lyles, 2001), firms also actively source distant knowledge (Vasudeva & Anand, 2011) as part of their competitive strategy in the marketplace. Understanding the transformation pathway of a firm's learning provides an explanation on how learning firms from emerging economies accommodate external knowledge into their organizations, even if the knowledge is perceived to be incongruent with their current knowledge stock.

Transformation occurs when the newly acquired knowledge is initially considered incompatible with the firm's current cognitive frames of reference and the knowledge structure of the firm (Todorova & Durisin, 2007). When this happens, an organization has to transform its cognitive structure in order to successfully decode and accommodate new ideas and knowledge (Asmussen, Foss, & Pedersen, 2013). According to Koestler (1964), bisociation, the key mechanism to facilitate the transformation process, occurs when a situation or idea is perceived in two self-consistent but from distinct and incompatible frames of reference. Based on this notion, Zahra and George (2002) explained that bisociation is the mechanism underlying "transformation" process to accommodate incongruent knowledge into the firm's operations and defined transformation as a firm's ability to recognize a set of incongruous knowledge and then combine this with existing knowledge to arrive at a new perceptual schema. That is, a firm may refine its routines in facilitating the acquisition of new knowledge by adding or deleting existing knowledge or reinterpreting it (Zahra & George, 2002). Transformation is important for the exploitation process to occur in that it creates a synergy between new knowledge and a firm's pre-existing knowledge stock which can then be exploited for new products (Kogut & Zander, 1992), new market segments, more advanced technology, or efficient operations (Yli-Renko, Autio, & Sapienza, 2001). This study therefore hypothesizes that when the acquired knowledge is incompatible with the learning firm's pre-existing perceptual schema, the firm will adjust its cognitive and knowledge structures to accommodate new and incongruous sets of knowledge through the transformation process prior to the exploitation process.

***Hypothesis 1a:*** *Transformation mediates the positive relationship between knowledge acquisition and exploitation.*

The second learning pathway is through the assimilation process. This study took into account previous research that employed the knowledge similarity/overlap (Darr & Kurtzberg, 2000, Lane & Lubatkin, 1998) to explain how inter-firm learning is aligned with the assimilation pathway of ACAP. Assimilation occurs when newly acquired knowledge closely fits the existing cognitive schema and knowledge structures of the firm (Todorova & Durisin, 2007). An organization can decode and comprehend such knowledge without challenging its existing knowledge and cognitive structures as the knowledge is compatible with its existing context. Only minor adjustments are needed to improve the fit, and thus the firm can subsume the new knowledge into their existing cognitive schema and prior knowledge structures (Asmussen, Foss, & Pedersen, 2013) and promptly facilitate knowledge transmission (Flatten, Greve, & Brettel, 2011). Assimilation is essential for the exploitation process in the sense that it allows for the continuous detection of trends in the industry environment and for the facilitation of timely redeployment of necessary skills and competencies (Zahra & George, 2002) with current products and customers segments (Levinthal & March, 1993). This study therefore hypothesizes that when the acquired knowledge is perceived as congruent with the learning firm's pre-existing knowledge and cognition, such knowledge is only slightly altered through the assimilation process prior to entering the exploitation process.

***Hypothesis 1b:*** *Assimilation mediates the positive relationship between knowledge acquisition and exploitation.*

#### **4.2.4 Parallel ACAP pathways: The role of contingencies**

As mentioned earlier, although the parallel pathways of the ACAP model are compatible with the knowledge transfer literature in recognizing different paths of learning, they do not take into account the characteristics of the external knowledge regularly emphasized within the knowledge transfer literature. Also, the knowledge

transfer literature itself does not cover the whole process of learning from external knowledge like ACAP does. Therefore, there exists an opportunity for theoretical integration to further advance the ACAP model. Thus far, we still know less about the condition that explains the firm's utilization of the two pathways in responding to heterogeneous knowledge acquired and the effectiveness of the two pathways. To address this gap, this study considers the role of knowledge characteristics as contingency factors driving the parallel pathways of the ACAP model, particularly in relation to the extent to which knowledge heterogeneity channels the two responses of the firms (namely transformation and assimilation) to external knowledge, and the extent to which they influence the effectiveness of the two organizational responses.

This study followed Subramaniam and Venkatraman (2001) and argued that the extent to which acquired knowledge successfully integrated into a learning firm is a function of the match between knowledge characteristics and the information-processing processes employed by the firm itself. The fit indicates how well the firm makes sense of and exploits the acquired knowledge for its competitive advantage. This theoretical reasoning is consistent with recent studies (Asmussen, Foss, & Pedersen, 2013, Szulanski, Ringov, & Jensen, 2016) highlighting the nature of knowledge can influence the way the learning firm responds to the acquired knowledge. Additionally, the knowledge-based view suggests the unique characteristics of knowledge make its transfer and recombination process difficult, costly, and uncertain (Grant, 1996, McEvily & Chakravarthy, 2002). Therefore, the knowledge per se makes little contribution to generating competitive advantages for the firm unless it develops internal processes to reflect the characteristics of the acquired knowledge (Luca & Atuahene-Gima, 2007).

In organizing GVCs, product and operational knowledge needs to be transmitted among the partners in order to enable value creation and transactions among them

(Gereffi, Humphrey, & Sturgeon, 2005). Emerging economy firms, which are typically technologically-laggard, deal with value chain partners who possess more diverse and advanced knowledge than they do. EE firms are required to absorb the adaptation costs associated with acquiring the transmitted knowledge in order to ensure “mutual knowledge”, which both foreign and EE partner firms assume each has about the other in their communication and transactions with each other (Johanson & Mattsson, 1987). The rationale for the absorption of adaptation costs by EE firms is extrapolated from the TCE notion of asset specificity (Williamson, 1979). The current study maintains that this specificity idea carries into the way firm from emerging economies deals with the knowledge transmitted through GVC linkages. Generally, firms are required to customize and develop inter-firm specializations (Dyer, 1996) by creating assets which are specialized in conjunction with the assets of their trading partners. In terms of knowledge transmission, the learning firm from emerging economies is incentivized to absorb the cost of transforming their cognitive and knowledge structures in accordance with that of the dominant partners in order to benefit from knowledge spillover. Such knowledge is more likely to create limited relevance and congruity for learning by EE firms, particularly when the transmitted knowledge is highly specific to external sources (e.g., GVC partners) and highly complex. Thus EE firms are required to transform themselves and absorb the adaptation costs.

In such circumstances, the ACAP pathways of EE firms are contingent upon the congruity between the characteristics of newly acquired knowledge and the existing knowledge structures of the firms. When there is a lack of congruity, it is likely that the learning firm from emerging economies will utilize a transformation over an assimilation pathway to accommodate the new knowledge transmitted from advanced foreign partners. In this case, an assimilation pathway may not allow EE firms to fully

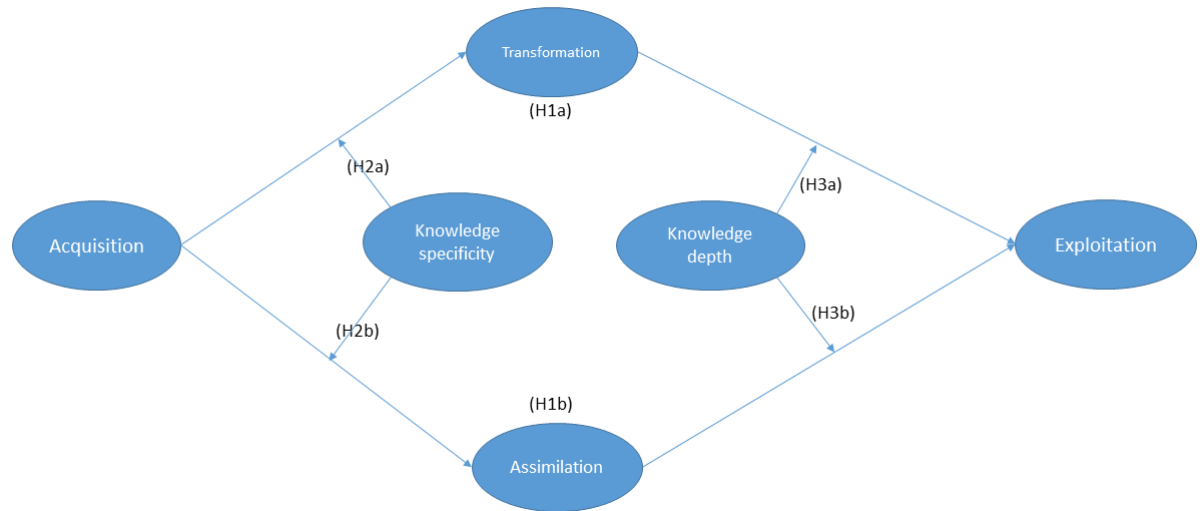


realize the value of incongruent knowledge as the firms do not modify their own existing cognitive and knowledge structures.

I now turn to consider the key characteristics of the knowledge transmitted between GVC partners. The GVC is a multi-faceted process of interaction involving different modes of knowledge transmission and development (Saliola & Zanfei, 2009). Technologically-laggard firms from emerging economies have to deal with the large volume of information that is required to sustain a transaction in the chain relationship. Gereffi, Humphrey, and Sturgeon (2005) suggested that foreign buyers usually place demands such as production technology and product differentiation on the chain members in emerging economies. For instance, while buyers might attempt to reduce the complexity of transactions by developing technical and process standards to ensure their product requirements are met (Gereffi, Humphrey, & Sturgeon, 2005), a high level of product differentiation (involving unique specifications and product knowledge and characteristics) can lead suppliers to engaging in R&D activities, and advanced technical knowledge and capabilities (Saliola & Zanfei, 2009). This nature of interaction in GVC partnerships suggests specificity and depth are important knowledge features that might influence how chain members organize, govern, and strengthen their competencies. Thus, by examining the moderating effect of knowledge specificity and depth on the parallel pathways of the ACAP model, the current study seeks to understand how these knowledge characteristics influence the way firms from emerging economies respond to external knowledge (Asmussen, Foss, & Pedersen, 2013, Subramaniam & Venkatraman, 2001). As such, it facilitates an understanding on how EE firms achieve learning through the match between internal knowledge-processing mechanisms and transmitted knowledge that might be incongruent with the level of their current knowledge.

First, this study proposes that knowledge specificity moderates the first-stage relationships (specified in Figure 4), including the relationship between knowledge acquisition and transformation, as well as that between acquisition and assimilation. According to Zahra and George (2002), external knowledge is context-specific and thus may embody heuristics for outsiders to comprehend or replicate. When the learning firm does not have complementary assets to that specific knowledge, comprehension is especially difficult and thus reduces the assimilation of that knowledge. This suggests knowledge specificity is a moderating condition. Second, this study views the depth feature of knowledge may not be clearly articulated and observable by the learning firm until the firm has integrated it. This is because firms usually gain an in-depth understanding of external knowledge and its complementary benefits only after they have combined the knowledge generated externally with their own internal knowledge structures (Cassiman & Veugelers, 2006, Choi & McNamara, 2018). It is, therefore, expected that the depth feature of knowledge plays a moderating role at the second stage of the proposed model. Further, as the potential benefits of knowledge may be extracted differently by the two ACAP pathways, it is thus examining the relative prominence of the two ACAP pathways in knowledge exploitation when the knowledge acquired externally is regarded as having a high depth level by the learning firm. Together, the proposed model would reveal how the learning firms from emerging economies respond to external knowledge which might be unfamiliar and incongruent to the level of knowledge possessed by the firms themselves.

**Figure 4: The proposed model for study 2**



It is argued that knowledge specificity, the first contingency factor, moderates the first-stage relationship in the model. Knowledge is considered specific when it is tailored to the requirements of a specific context (Galunic & Rodan, 1998) in which it is maximally productive for a particular use or used in conjunction with a set of users unique to the focal firm (McEvily & Chakravathy, 2002). Specific knowledge usually emerges from a specific customer segment toward a specific product or strategy, or even specific knowledge of particular competitors (Luca & Atuahene-Gima, 2007). Specificity can also prolong a firm's competitive advantage by increasing the immobility of distinct knowledge; nevertheless, such attributes lose their value outside a specific context (Peteraf, 1993).

It is challenging for a learning firm to integrate knowledge highly specific to the knowledge source (e.g., lead firms or key foreign buyers in GVCs) as it might lack contextual knowledge or be unfamiliar with the application of that knowledge due to its idiosyncratic features. In GVCs, EE firms might not necessarily possess detailed understanding of specific knowledge in order to serve their key foreign buyers, who may possess a greater detailed application of such knowledge. Likewise, buyers with

specific demands for product idiosyncrasies may fail to communicate them to their EE partner firms (McEvily & Chakravarthy, 2002). Thus, the specificity of the knowledge source raises a high level of knowledge incongruity for the EE firms. Such incongruity incurs the prohibitive costs of knowledge transfer (Foss, 2007, Reagans & McEvily, 2003) due to the learning firm's cognitive limitations (Heiman & Nickerson, 2002). This study argues that, in such condition, the specificity feature of knowledge elevates the use of the transformation pathway by the learning firm to decode and integrate the acquired knowledge. When a firm deals with incongruent knowledge, bisociation will be triggered to alter a pre-existing perceptual schema and arrive at a new one (Zahra & George, 2002). The new perceptual schema will make decoding and recoding specific knowledge less likely to incur the risks of misunderstanding and misapplication. Additionally, the updated perceptual schema enables the combination of existing knowledge with the seemingly incongruent knowledge to generate new competencies for the learning firms (Zahra & George, 2002). Hence, it is likely that the integration of acquired knowledge in a transformative manner is positively moderated by the specificity feature of that knowledge.

***Hypothesis 2a:*** *The positive relationship between knowledge acquisition and transformation is stronger when knowledge specificity is high as opposed to low.*

On the other hand, if the learning firm opts for assimilation, the acquired knowledge will only be perceived as a match with the firm's pre-existing cognitive structure when it can be effectively integrated with its current knowledge stock. As the learning firm's perceptual schema remains unmodified, the firm has limited capabilities to find links and to make accurate conclusions (Luca & Atuahene-Gima, 2007) from the incongruent knowledge. This creates difficulties in fitting the specific knowledge into the firm's cognitive structure. As the assimilation process tries to directly modify the specific knowledge to fit into the existing knowledge structure, the learning firm may

find it unfit as the specificity feature is hard to alter due to its idiosyncratic nature (Luca & Atuahene-Gima, 2007), and that altering the knowledge leads to some of its value being lost (Peteraf, 1993). The specificity feature thus hampers the use of the assimilation process in integrating the acquired knowledge. Additionally, high knowledge transfer costs may occur due to misinterpretation and misuse of specific knowledge transmitted between partners, and thereby will potentially break down the GVC linkage. Hence, it is likely that the integration of knowledge acquired externally in an assimilative manner is negatively moderated by knowledge specificity.

***Hypothesis 2b:** The positive relationship between knowledge acquisition and assimilation is weaker when knowledge specificity is high as opposed to low.*

This study argues that knowledge depth, the second contingency factor, moderates the second-stage relationship in the model. The depth feature of knowledge concerns the level of sophistication and complexity of knowledge in a specific domain (Bierly & Chakrabarti, 1996). According to Luca and Atuahene-Gima (2007), the depth attribute reflects the vertical dimension of knowledge, “the level of sophistication with which a firm is able to connect the unique and interdependent relationships among the factors that describe key issues” (p. 98). Thorough knowledge in term of customer, market segment, and technical knowledge and skills indicates that the firm has an in-depth understanding of knowledge within a specific knowledge domain (Zhou & Li, 2012).

The depth of knowledge is typically related to the core competencies allowing firms to become leaders in a specialized field (Bierly & Chakrabarti, 1996). Prabhu, Chandy, and Ellis (2005) posited that deeper knowledge enables firms to gain competence in core product areas and thus create more innovation activities. Following this logic, the current study views that in-depth knowledge reaches the core competencies of the learning firm by providing a thorough understanding of

technologies and/or markets, as opposed to instruction-type knowledge (i.e., an explanation is provided as to what works, but not why it works), which can only improve the peripheral activities of learning firms. Nevertheless, in-depth knowledge also implies differential functional expertise (Luca & Atuahene-Gima, 2007) leading to different thought worlds (Leonard-Barton, 1992) and different logics far from their cognition and understanding, thereby inducing conflict for a firm's action (Besharov & Smith, 2014). The knowledge depth thus has important implications in the parallel ACAP pathways, and consequently on the benefits obtained through exploitation.

This study argues different levels of knowledge depth have different implications for an EE firm's transformation and assimilation pathways. In a GVC setting, the extant knowledge of EE firms is unequal to the level of knowledge possessed by foreign partners. In-depth knowledge transmitted from advanced partners is assumed to improve the learning firm's key domains of knowledge and thus upgrade its core competencies. The current study maintains that the learning firm's transformation pathway is likely to be more effective with in-depth knowledge. Transformation, indeed, enables knowledge exploitation by replacing and recombining the learning firm's pre-existing knowledge (Zahra & George, 2002) with in-depth knowledge that contributes directly to the firm's core competencies. Such knowledge will allow the learning firm to foresee future market trends and invest accordingly (Zhou & Li, 2012) in order to renew its core competencies and business logic. In contrast, if the transformation pathway keeps removing the firm's knowledge stock and replacing it with instruction-type knowledge, the firm may find itself with a knowledge stock that is less likely to contribute to its core competencies. It is, therefore, expected that the association between transformation and knowledge exploitation is stronger when the acquired knowledge is in-depth rather than when it is peripheral.

***Hypothesis 3a:*** *The positive relationship between transformation and knowledge exploitation is stronger when knowledge depth is high as opposed to low.*

On the other hand, the learning firm's assimilation pathway is more effective when the acquired knowledge complements its existing core competencies by improving peripheral activities without inducing conflicts from multiple core logics (Besharov & Smith, 2014). Since the assimilation process allows the acquired knowledge to be subsumed into the learning firm's knowledge stock without changing its perceptual schema (Asmussen, Foss, & Pedersen, 2013, Todorova & Durisin, 2007) or removing its current knowledge structure (Zahra & George, 2002), the firm may face a situation where the newly acquired knowledge is less compatible with its current core competencies and the existing logic that prescribes the firm's actions. Such circumstance consequently creates a conflict in the firm's logics which induce contradictory prescriptions for a firm's actions (Besharov & Smith, 2014). This study argues that, with the assimilation pathway, in-depth knowledge may add new domains of knowledge (Bierly & Chakrabarti, 1996) to the firm's existing, unmodified cognitive and knowledge structure, and thus create conflict with its existing logic. Hence, assimilation pathway is like to be less effective with in-depth knowledge because the learning firm may not depart from its existing core knowledge and logics to deal with the new domains of knowledge and logic. In a similar vein, it is argued that when an assimilation pathway deals with instruction-type knowledge, such knowledge is less likely to involve new domains of knowledge or offer compatible prescriptions for a firm's actions (Besharov & Smith, 2014), and thereby it will not complement the learning firm's current core competencies by upgrading peripheral activities without inducing conflicts into the actions and decisions of the learning firm. For these reasons, the depth attribute tends to hinder the positive association between assimilation and knowledge exploitation.

***Hypothesis 3b:** The positive relationship between assimilation and knowledge exploitation is weaker when knowledge depth is high as opposed to low.*

### **4.3 Empirical Design and Methods**

#### **4.3.1 Sampling frame and characteristics**

Firms from Southeast Asian countries, especially Thailand, have been actively participating as suppliers in GVCs and use them as platforms for growth to ultimately build up their global competitiveness. Nevertheless, Thailand still has a relatively low technological profile (Saliola & Zanfei, 2009), and therefore learning from international business linkages is especially important for Thai firms. Despite the significance of GVCs as a source of learning for firms from Thailand and Southeast Asian emerging economies in general, this context has received relatively limited empirical attention, especially when compared to large emerging economies such as China and India. Therefore, not only can Thailand offer an ideal empirical location due to its significant connection to global linkages as suppliers for foreign partners in GVCs, but it could also generate empirical evidence and insight implications from a small-to-middle sized economy for IB literature.

This study drew a random sample of 1,000 Thai suppliers from a list provided by the Department of International Trade Promotion (which consisted of approximately 11,600 Thai suppliers) as the initial sampling frame. Out of this initial sample, 895 suppliers had valid contact details. The survey was conducted from October 2016 to May 2017. This study adopted a two-step procedure to improve the survey response rate, and first conducted telephone pre-screening to identify potential respondents from each firm. Second, based on their initial agreement, I scheduled interviews with the identified respondents in each firm and collected data through face-to-face or phone interviews. If I were unable to make an appointment for an interview, then the



questionnaire was delivered to potential respondents by post or email. The questionnaires were developed from February to September 2016 based on existing scales (to be discussed in the next section). The language of the survey was Thai. A back-translate procedure was used to ensure comparability between the English and Thai versions of the survey instrument. All questionnaire items were pretested and validated by one business executive and three scholars prior to the distribution of the survey.

After three follow-up reminders, a total of 351 firms had responded to the survey, 59 of which were excluded due to either too many missing values or firm age being < 6 years<sup>4</sup>. After excluding the unusable questionnaires, this study retained 292 useable responses (32.6% response rate). This study has a comparable response rate with recent studies related to ACAP and the learning of emerging economy firms (Khan, Shenkar, & Lew, 2015, Zhou & Li, 2012). Respondents came predominantly from six major industries, which included consumer electronics & electronics components (7.8%), machinery and industrial equipment (8.2%), automotive parts & motorcycles (9.93%), furniture and decors (12.33%), textiles and clothing (10.96%), gems and jewellery (26.37%), and other industries (24.4%).

To avoid common method variance (CMV), the measure of ACAP and different knowledge characteristics were put to different positions in the survey (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). This study strictly obtained data from the top or senior managers responsible for the operations and technology departments of the firms (the first respondent). Additionally, company demographics (e.g., age, number of employees, ownership, international experience, etc.) were obtained from the second respondent from each firm (that is, top or senior managers in the same firm who did not answer the first set of survey).

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<sup>4</sup> The survey asked for retrospective information between 2011 and 2016.

Following the extrapolation methods, a test of non-response bias showed no significant difference in the mean comparison t-test between the 248 on-time versus the 44 late responses on key variables. Further, the sample distributions were mostly consistent with populations on key distributional characteristics (see Table 8), lending confidence to the representativeness of the sample.

**Table 8: Sample firms and key distributional characteristics**

<b>Firm Age (Years, %)</b>						<b>Export (%)</b>		
MIC	<5	5-9	10-19	20-29	>30	< 20	20-49	> 50
2012 (N=424,196)	18.4	26.2	34.8	12.8	7.8	25.90	26.3	47.8
This sample (N=292)	n/a	8.2	54.5	20.6	16.6	13.7	50.0	36.3

	<b>No. of Emplo yees (Size)</b>	<b>Thai Firms (%)</b>	<b>Joint Ventures (%)</b>	<b>Foreign Firms (%)</b>	<b>Total (%)</b>
TFP2015 (N=903)		28.60	1.40	0.80	30.80
This sample (year 2015, N=120)	< 50	38.01	3.08	0.00	41.09
TFP2015 (N=960)		27.70	3.30	1.70	32.70
This sample (year 2015, N=74)	51-200	15.41	5.82	4.11	25.34
TFP2015 (N=1069)		26.30	6.00	4.20	36.50
This sample (year 2015, N=98)	> 200	8.90	11.30	13.36	33.56
Total TFP2015 (N=1069)		82.60	10.60	6.70	100
Total sample (year 2015, N=292)	All	62.30	20.20	17.50	100

**Note:** Population information was obtained from (i) the 2012 Manufacturing Industrial Census (MIC) published by the National Statistical Office, Ministry of Digital Economy and Society, Royal Thai Government and (ii) Total Factor Productivity (TFP) Report 2015 published by the Office of Industrial Economics, Ministry of Industry, Royal Thai Government.

### 4.3.2 Measures and operationalization

The measurement items used for this survey were adapted from previously developed scales. Some control variables were measured using actual values (e.g., firm size, age, and years of international experience). All measurement items and indicators are listed in Table 9.

*Absorptive capacity:* There are several measures used regarding ACAP (Camison & Fores, 2010, Cepeda-Carrion, Cegarra-Navarro, & Jimenez-Jimenez, 2012, Chauvet, 2014, Jimenez-Barrionuevo, Garcia-Morales, & Molina, 2011, Liao, Welsch, & Stoica, 2003, Thomas & Wood, 2014). Along with Jansen *et al.*'s (2005) ACAP measure previously developed at an organizational unit-level from one company in the financial service industry, another measure of ACAP has been developed at firm-level by Flatten, Engelen, Zahra, & Brettel (2011), and has been increasingly adopted in recent studies (cited more than 351 times as of May 2018). Flatten *et al.*'s (2011) ACAP measure was built upon relevant prior management literature and previously developed scales, such as Jansen, Van den Bosch, & Volberda (2005), Szulanski (1996), and Collins & Smith (2006), and was then used in a series of pre-tests and two large survey-based studies for validation. I therefore decided to utilize Flatten *et al.*'s (2011) firm-level measure in this study.

**Table 9: Constructs and indicators**

Constructs and indicators	Standardized Factor Loading	t-value	R <sup>2</sup> -value
<b>Knowledge specificity</b> ( $\alpha = 0.77$ , CR=0.77, AVE=0.53 SQRT AVE= 0.73)			
1. The acquired knowledge about customers and competitors was quite specific to our foreign partners	0.75	18.74	0.56
2. The knowledge and skills we learnt were tailored to the specific conditions of our foreign partners	0.70	16.84	0.49
3. We largely depended on the specific human and physical assets in order to understand and acquire information from our foreign partners	0.72	17.68	0.52
(Luca & Atuahene-Gima, 2007)			
<b>Knowledge depth</b> ( $\alpha = 0.87$ , CR=0.88, AVE=0.70 SQRT AVE= 0.84)			
1. Our foreign partners presented thorough understanding and experience of current customers.	0.81	33.34	0.65
2. Our foreign partners presented in-depth knowledge of the key market segment that we focus on.	0.90	53.66	0.82
3. Our foreign partners presented thorough technical knowledge and skills within our specialized domain.	0.80	32.09	0.64
(Zhou & Li, 2012)			
<b>Acquisition</b> ( $\alpha = 0.80$ , CR=0.82, AVE=0.61, SQRT AVE= 0.78)			
1. The search for relevant information concerning our industry is every-day business in our company;	0.83	35.34	0.69
2. Our management motivates the employees to use information sources within our industry;	0.88	42.11	0.78
3. Our management expects that the employees deal with information beyond our industry.	0.60	14.40	0.36
(Flatten, Engelen, Zahra, & Brettel, 2011)			

Constructs and indicators (Cont.)	Standardized Factor Loading	t-value	R <sup>2</sup> -value
<b>Assimilation</b> ( $\alpha = 0.86$ , CR=0.87, AVE=0.63, SQRT AVE= 0.791)			
1. In our company ideas and concepts are communicated cross-departmental;	0.89	53.33	0.80
2. Our management emphasizes cross-departmental support to solve problems;	0.80	32.52	0.64
3. In our company there is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments;	0.70	21.33	0.49
4. Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements.	0.76	27.20	0.58
(Flatten, Engelen, Zahra, & Brettel, 2011)			
<b>Transformation</b> ( $\alpha = 0.89$ , CR=0.89, AVE=0.67, SQRT AVE= 0.819)			
1. Our employees have the ability to structure and to use collected knowledge;	0.83	36.34	0.68
2. Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available;	0.81	33.70	0.65
3. Our employees successfully link existing knowledge with new insights;	0.81	33.87	0.66
4. Our employees are able to apply new knowledge in their practical work.	0.83	37.47	0.70
(Flatten, Engelen, Zahra, & Brettel, 2011)			
<b>Exploitation</b> ( $\alpha = 0.90$ , CR=0.90, AVE=0.74, SQRT AVE= 0.862)			
1. Our management supports the development of prototypes;	0.83	38.46	0.70
2. Our company regularly reconsiders technologies and adapts them accordant to new knowledge;	0.89	51.16	0.79
3. Our company has the ability to work more effective by adopting new technologies.	0.86	45.29	0.75
(Flatten, Engelen, Zahra, & Brettel, 2011)			

Constructs and indicators (Cont.)	Standardized Factor Loading	t-value	R <sup>2</sup> -value
<b>Knowledge breadth</b> ( $\alpha = 0.86$ , CR=0.87, AVE=0.69 SQRT AVE= 0.83)			
1. Our foreign partners (e.g., customers or suppliers) offered/presented market information from a diversified and wide-ranging customer portfolio.	0.80	31.15	0.65
2. Our foreign partners offered/presented knowledge of multiple market segments.	0.89	46.31	0.80
3. Our foreign partners offered/presented R&D expertise consisting of technical knowledge from a variety of background.	0.79	29.01	0.63
(Zhou & Li, 2012)			
<b>Knowledge speed</b> ( $\alpha = 0.83$ , CR=0.83, AVE=0.716 SQRT AVE= 0.85)			
Please identify scale between 1 to 5 that best describes knowledge characteristics your company has gained from customers/partners in global supply chains:			
1. Slow (=1) vs. Fast (=5)	0.89	18.56	0.80
2. Sluggish (=1) vs. Rapid (=5)	0.80	17.08	0.64
(Zahra, Ireland, & Hitt, 2000)			
<b>Knowledge explicitness</b> ( $\alpha = 0.88$ , CR=0.88, AVE=0.719 SQRT AVE= 0.85)			
To what extent is the knowledge that you have gained from your TOP 5 foreign customers/partners ....			
1. Written knowledge about technologies	0.80	30.71	0.64
2. Procedural manuals or technical manuals	0.87	41.40	0.76
3. Written knowledge about management techniques	0.87	41.18	0.76
(Dhanaraj, Lyles, Steensma, & Tihanyi, 2004)			

ACAP comprises of four sub-components previously defined by Zahra & George (2002). Based on a 7-point Likert scale, the respondents were asked to refer to the time period 2013-14 in answering the questions. The alpha values for the four dimensions are as follows: three-item measure of acquisition ( $\alpha = 0.80$ ), four-item measure of assimilation ( $\alpha = 0.86$ ), four-item measure of transformation ( $\alpha = 0.89$ ), and three-item measure of exploitation ( $\alpha = 0.90$ ). The indicators for *acquisition construct* have mean values between 4.42 and 4.58, and the respective standard deviations are from 1.23 to 1.29. The indicators for *assimilation* have mean values between 4.57 and 4.84, and the respective standard deviations are from 1.24 to 1.34. The indicators for *transformation* have mean values between 4.41 and 4.54, and the respective standard deviations are from 1.18 to 1.22. The indicators for *exploitation* have mean values between 4.74 and 4.82, and the respective standard deviations range from 1.15 to 1.21.

*Knowledge specificity*: The measurement developed by Luca & Atuahene-Gima (2007) was modified to capture knowledge specificity. The three-item measure ( $\alpha = .77$ ) captures the specific aspect of market and technical knowledge presented by the customers/partners in GVCs. The respondents were asked to refer to the knowledge they had gained from the top five foreign customers/partners in GVCs during the time period 2011-12, and were asked to rate the items using a 5-point scale. The indicators had mean values between 3.61 and 3.63 on a five-point scale, and standard deviations were from 0.865 to 0.88.

*Knowledge depth*: this study modified Zhou & Li's (2012) measure of knowledge depth, which captures the thoroughness of a firm's market knowledge and technical expertise within its specific domains of knowledge, to capture the depth attribute of knowledge transmitted in GVCs. The respondents were asked to refer to the knowledge they have gained from their top five customers during the time period 2011-12 to rate the measure of knowledge depth ( $\alpha = 0.87$ ) using a 7-point scale. The items

have mean values between 4.43 and 4.47 on a seven-point scale, and standard deviations are from 1.16 to 1.18.

*Control variables:* Some of the key variables highlighted in previous ACAP studies were included as control variables. This study controlled for supplier *size* (operationalized as the log of the average number of employees in the years 2013 and 2014), *age* (the number of years of operation up to and including the year 2014), a supplier's *international experience* (the number of years serving international customers/partners up until, but not including, 2013), and *ownership* (joint venture firms were coded 1, with wholly-owned by Thais as the baseline). This study also coded high-tech industries (Qian & Li, 2003, Stuart, 2000) *dummy* and heavy industry (Rumelt, 1982) *dummy*<sup>5</sup>, with other industries as the baseline. These variables reflect the resources and power of firms that are conceptually related to learning and utilizing the external knowledge of EM suppliers.

In addition to supplier and industry level controls, this study controlled for other knowledge characteristics, in addition to the focal knowledge attributes, as prior studies (Luca & Atuahene-Gima, 2007, McEvily & Chakravarthy, 2002, Zhou & Li, 2012) have suggested that they affect a firm's learning process. The three-item measure of *knowledge breadth* proposed by Zhou & Li (2012) was modified to assess the diversification in the knowledge of market and technological background as presented by customers/partners in GVCs. To measure *knowledge speed*, the two semantic differential scales developed by Zahra, Ireland, & Hitt (2000) were employed to capture how fast knowledge changes in the GVCs. The three-item measure of *knowledge*

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<sup>5</sup> The definition of High-tech industry please refers to Qian and Li (2003) and Stuart (2000) and heavy industry refers to Rumelt (1982). In this sample, chemicals and iron & steel industry are included as heavy industries while firms in automotive parts & motorcycles, machinery & industrial equipment, consumer electronics & electronics components, computer hardware & IT, medical equipment, and telecommunications are classified as high-tech industry.



*explicitness* proposed by Dhanaraj, Lyles, Steensma, & Tihanyi (2004) was employed to capture any written knowledge regarding technology, procedural manuals, and management that was obtained from GVC customers/partners about each other.

## **4.4 Analysis and Results**

### **4.4.1 Measurement model**

Facilitated by MPlus Version 7 (Muthén & Muthén, 2010), a measurement model was created to assess convergent and discriminant validity. The inter-item correlation provides initial evidence of high levels of convergent and discriminant validity as correlation coefficients are higher inside the constructs.

This study tested construct validity using a confirmatory factor analysis (see Table 9). All items load significantly on the expected constructs ( $p < 0.01$ ). The linearity of the relations between constructs and indicators (R-squared values) is relatively strong in all cases: the lowest  $R^2$  value is 0.358 or above. The  $t$ -values for all indicators are highly significant (ranging from the lowest 14.399 to the highest 53.658), and their standardized factor loadings are large (all above 0.7 except one item at 0.598). All fit measures confirmed the validity of all constructs ( $\chi^2=650.24$ ,  $df=314$ ;  $\chi^2/df=2.07$ , CFI=0.94; TLI=0.93; SRMA = 0.04; RMSEA=0.06). Additionally, the composite variable of all constructs exceeds the 0.7 benchmark (Gerbing *et al.*, 1988). To exemplify, composite reliability (CR) of knowledge specificity and knowledge depth are 0.77 and 0.88 respectively. All average variances extracted (AVE) are also greater than the benchmark of 0.50. As such, these measures demonstrate high convergent validity and reliability.

Drawing from Fornell & Larcker (1981), this study assessed discriminant validity of constructs by examining whether the square root of the AVE of each construct (as shown in the diagonal of Table 10) was greater than the highest correlation

between latent variables involving the focal construct. In all cases, the square roots of AVE values are higher than the correlations across all pairs of the constructs. Additionally, a series of  $\chi^2$  difference tests between each pair of constructs was performed. The unconstrained model is significantly higher than all of the constrained ones and all the chi-square differences are highly significant. For instance, as shown in Table 11, the fit indexes of the confirmatory factory analysis (CFA) reveal that the eight-factor model provided a better fit than the alternative models (e.g., acquisition vs. assimilation:  $\Delta\chi^2(8)=94.64, p=0.000$ ; assimilation vs. transformation:  $\Delta\chi^2(8)=143.64, p=0.000$ ; transformation vs. exploitation:  $\Delta\chi^2(8)=144.42, p=0.000$ ), providing evidence that all constructs in this study are sufficiently distinct from each other. A single-factor procedure test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) was also performed to test for potential common method bias, but a single factor could not account for all the variance in this data, indicating that no substantial amount of common method variance is present.

**Table 10: Correlation Matrix and Descriptive Statistics of Measures**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Knowledge specificity	<b>0.73</b>														
2 Knowledge depth	.375**	<b>0.84</b>													
3 Acquisition	.257**	.506**	<b>0.78</b>												
4 Assimilation	.246**	.539**	.667**	<b>0.79</b>											
5 Transformation	.275**	.476**	.639**	.705**	<b>0.82</b>										
6 Exploitation	.253**	.424**	.566**	.719**	.712**	<b>0.86</b>									
7 Knowledge breadth	.340**	.756**	.553**	.528**	.503**	.418**	<b>0.83</b>								
8 Knowledge speed	.382**	.196**	.176**	.164**	.221**	.171**	.195**	<b>0.85</b>							
9 Knowledge explicitness	.450**	.317**	.350**	.183**	.253**	.147*	.311**	.357**	<b>0.85</b>						
10 High-Tech industry	.157**	-.160**	-.180**	-.252**	-.177**	-.226**	-0.10	.226**	.255**	-					
11 Heavy industry	0.00	-0.03	-0.02	-0.05	-.121*	-.117*	-0.02	-0.03	0.04	-.152**	-				
12 Ownership	0.03	-.189**	-.200**	-.273**	-.221**	-.304**	-.166**	0.08	.171**	.560**	.185**	-			
13 Firm age (ln)	.120*	0.11	.129*	.115*	0.03	0.02	0.09	-0.01	.124*	0.05	0.00	-0.04	-		
14 Firm size (ln)	.122*	-0.10	-0.07	-.165**	-.154**	-.243**	-0.04	.151*	.268**	.481**	.178**	.567**	.210**	-	
15 International experience (ln)	0.07	0.08	0.04	0.02	-0.06	-0.07	0.09	0.05	.118*	0.06	0.04	0.08	.728**	.203**	-
Mean	3.62	4.44	4.48	4.67	4.48	4.78	4.42	3.46	3.35	0.28	0.05	0.38	2.66	4.43	2.48
Std. Deviation	0.72	1.08	1.17	1.11	1.04	1.08	1.04	0.83	0.96	0.45	0.23	0.49	0.58	1.51	0.61
Skewness	-0.05	0.19	0.14	0.19	0.22	0.34	-0.06	-0.25	-0.37	0.96	3.93	0.51	0.12	0.28	-0.07
Kurtosis	-0.41	-0.05	-0.09	-0.44	0.12	-0.43	0.64	0.30	-0.13	-1.08	13.56	-1.75	-0.15	0.09	0.40

Notes: The diagonal elements are square roots of the AVE.

The lower-left triangle elements are correlations among the composite measure (a composite variable for each construct is based on factor score weighted items).

N= 292; N/A = not applicable. \*\* Correlation is significant at the 0.01 level (2-tailed). \* Correlation is significant at the 0.05 level (2-tailed).

**Table 11: Results of Confirmatory Factor Analysis for the Measures of Variables Studies**

<b>Model</b>	<b><math>\chi^2</math></b>	<b><i>df</i></b>	<b>TLI</b>	<b>CFI</b>	<b>RMSEA</b>	<b>SRMA</b>
<b>Eight-factor model</b>	650.240	314	0.939	0.927	0.061	0.044
<b>Seven-factor model 1:</b> Acquisition and Assimilation combined	744.880	322	0.924	0.910	0.067	0.047
<b>Seven-factor model 2:</b> Acquisition and Transformation combined	775.478	322	0.918	0.904	0.069	0.047
<b>Seven-factor model 3:</b> Acquisition and Exploitation combined	816.495	322	0.911	0.895	0.073	0.052
<b>Seven-factor model 4:</b> Assimilation and Transformation combined	793.887	322	0.915	0.900	0.071	0.048
<b>Seven-factor model 5:</b> Assimilation and Exploitation combined	781.979	322	0.917	0.903	0.070	0.048
<b>Seven-factor model 6:</b> Transformation and Exploitation combined	794.662	322	0.915	0.900	0.071	0.049
<b>Seven-factor model 7:</b> Knowledge depth and breadth combined	691.304	322	0.933	0.922	0.063	0.044
<b>Single-factor procedure model</b>	2605.838	350	0.593	0.560	0.149	0.118

**Note:** TLI is the Tucker-Lewis index; CFI, the comparative fit index; RMSEA, the root-mean-square error of approximation; and SRMA, Standardized Root Mean Square Residual

#### 4.4.2 Hypotheses testing

This study used factor weighted scores to create composite variables followed by mean-centered focal variables, before creating interaction terms to avoid potential multicollinearity. PROCESS macro for SPSS (Hayes, 2013) was utilized to estimate each mediated path and its moderator in the model at the same time and to obtain 95% bias-corrected bootstrapped CI, using 5,000 bootstrap samples (Preacher & Hayes, 2008), for the conditional indirect relationship. A check of the variance inflation factor (VIF) indicated no serious multicollinearity.

Table 10 presents the means, standard deviations, and correlations among the focal variables and controls. The four sub-dimensions of ACAP were highly correlated, however, I believe this is not a serious issue in this study as this study can obtain the discriminant validity and distinctiveness of all constructs as shown in Table 11. Given that knowledge breadth, speed, and explicitness were significantly related to four dimensions of ACAP, these variables were controlled when testing the interplay between knowledge characteristics and the ACAP process.

To test Hypotheses 1a and 1b, I estimated the indirect relationship between acquisition and exploitation via transformation/assimilation using bias-corrected bootstrapped 95% confidence intervals (CI). The indirect relationship between knowledge acquisition and exploitation through the transformation process was significant (indirect effect = 0.158, SE=0.039, boost 95% CI [0.090, 0.243]) as confidence intervals were positive and did not contain zero. Likewise, the indirect relationship between knowledge acquisition and exploitation via the assimilation process was significant (indirect effect = 0.180, SE=0.041, boost 95% CI [0.109, 0.269]). However, the direct relationship between knowledge acquisition and exploitation was not significant (direct effect = 0.060, SE=0.052, CI [-0.042, 0.162]), indicating that the transformation and assimilation processes fully mediated the

relationship between knowledge acquisition and exploitation. Therefore, **Hypotheses 1a and 1b was supported.**

Consistent with Hypothesis 2a, Table 12 shows that the cross-product term (Acquisition\*Specificity) was significantly associated with transformation ( $B=0.13$ ,  $p=0.014$ ), indicating a moderating effect of knowledge specificity on the association between acquisition and transformation. **Hypothesis 2a was thus supported.** However, the cross-product term of Acquisition\*Specificity was not significantly related to assimilation ( $B=0.08$ ,  $p=0.114$ ). Therefore, **Hypothesis 2b was not supported.**

I explored the nature of the interaction terms by calculating the marginal effect of acquisition on transformation at different values of knowledge specificity (see Figure 5). The marginal effect is significantly stronger for values of knowledge specificity above 1.89, and 99.65 % of the sample observations are in the range where the marginal effect is significant.

Table 12 also shows the cross-product term transformation\*knowledge depth was significantly associated with knowledge exploitation ( $B=0.13$ ,  $p=0.008$ ), indicating a positive moderating effect of knowledge depth on the association between transformation and knowledge exploitation. As expected, the interaction between assimilation and knowledge depth had a negative, significant association with knowledge exploitation ( $B=-0.11$ ,  $p=0.033$ ). Therefore **Hypotheses 3a and 3b were supported.**

Figure 6 illustrates that the relationship between transformation and knowledge exploitation became significantly stronger when values of knowledge depth were above 3.097 (90.41 % of the sample observations are in the range where the marginal effect of transformation on exploitation is significant). In contrast, Figure 7 indicates that the assimilation-exploitation association was weaker for values of knowledge depth below

6.184 (94.18 % of the sample observations are in the range where the marginal effect of assimilation on exploitation is significant).

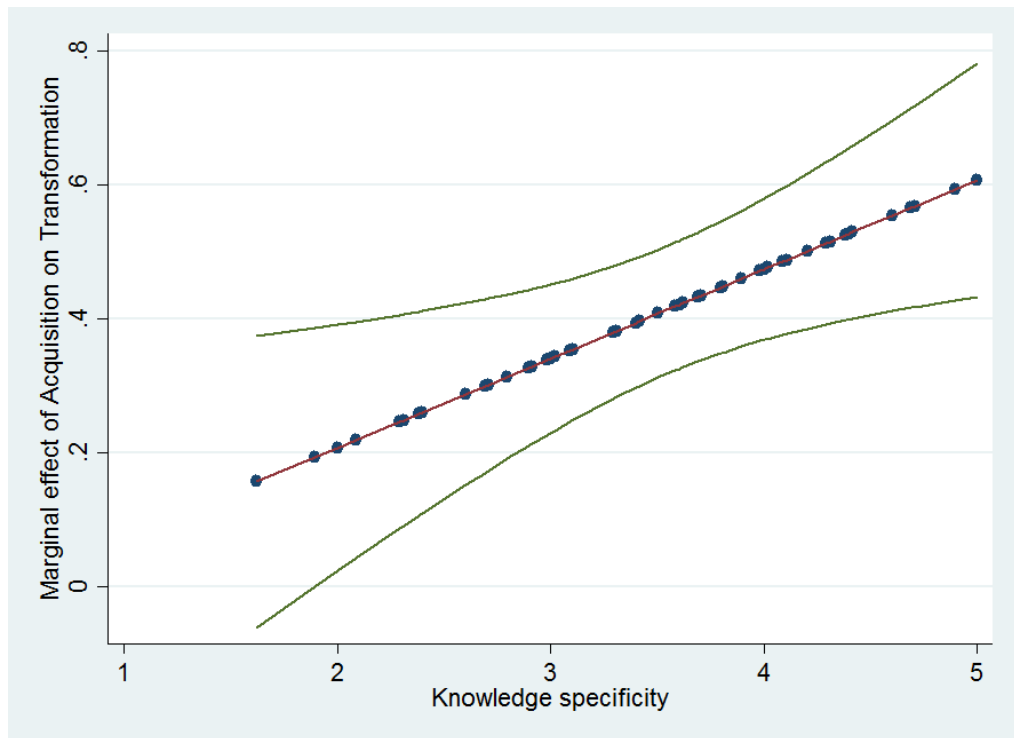
**Table 12: Regression results of the moderated mediation model**

	<b>Transformation</b>		<b>Assimilation</b>		<b>Exploitation</b>	
	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>
<b>Constant</b>	-0.81(0.40)	0.044	-1.00(0.42)	0.017	5.33(0.39)	0.000
<b>Controls</b>						
Joint venture ownership	0.04(0.13)	0.782	-0.06(0.13)	0.671	-0.13(0.12)	0.262
Firm age	0.06(0.12)	0.613	0.17(0.12)	0.159	-0.03(0.11)	0.778
Firm size	-0.04(0.04)	0.321	-0.03(0.04)	0.433	-0.05(0.04)	0.148
Int'l Experience	-0.18(0.11)	0.097	-0.12(0.11)	0.302	-0.04(0.10)	0.675
High-tech industry	-0.23(0.14)	0.098	-0.28(0.14)	0.047	0.05(0.12)	0.708
Heavy industry	-0.49(0.21)	0.022	-0.14(0.22)	0.520	-0.12(0.19)	0.528
<b>Control – Knowledge Characteristics</b>						
Knowledge breadth	0.19(0.05)	0.000	0.23(0.06)	0.000	-0.04(0.06)	0.574
Knowledge speed	0.15(0.06)	0.015	0.11(0.06)	0.083	0.04(0.05)	0.463
Knowledge explicitness	-0.01(0.06)	0.825	-0.10(0.06)	0.099	-0.03(0.05)	0.616
<b>Independent variable</b>						
Acquisition	0.43(0.05)	0.000	0.48(0.05)	0.000	0.07(0.05)	0.169
<b>Mediator variable</b>						
Transformation					0.36(0.06)	0.000
Assimilation					0.39(0.06)	0.000
<b>Moderating variables</b>						
Knowledge specificity	0.07(0.08)	0.349	0.08(0.08)	0.296		
Knowledge depth					0.02(0.06)	0.750
<b>Interaction terms</b>						
Acquisition * Specificity	0.13(0.05)	0.014	0.08(0.05)	0.114	-	
Transformation * Depth	-	-	-	-	0.13(0.05)	0.008
Assimilation * Depth	-	-	-	-	-0.11(0.05)	0.033
<b>Model summary</b>						
R <sup>2</sup>	0.498		0.524		0.629	
Overall model F ( <i>F</i> )	23.041	0.000	25.637	0.000	31.182	0.000
<i>df</i>	(12,279)		(12,279)		(15,276)	

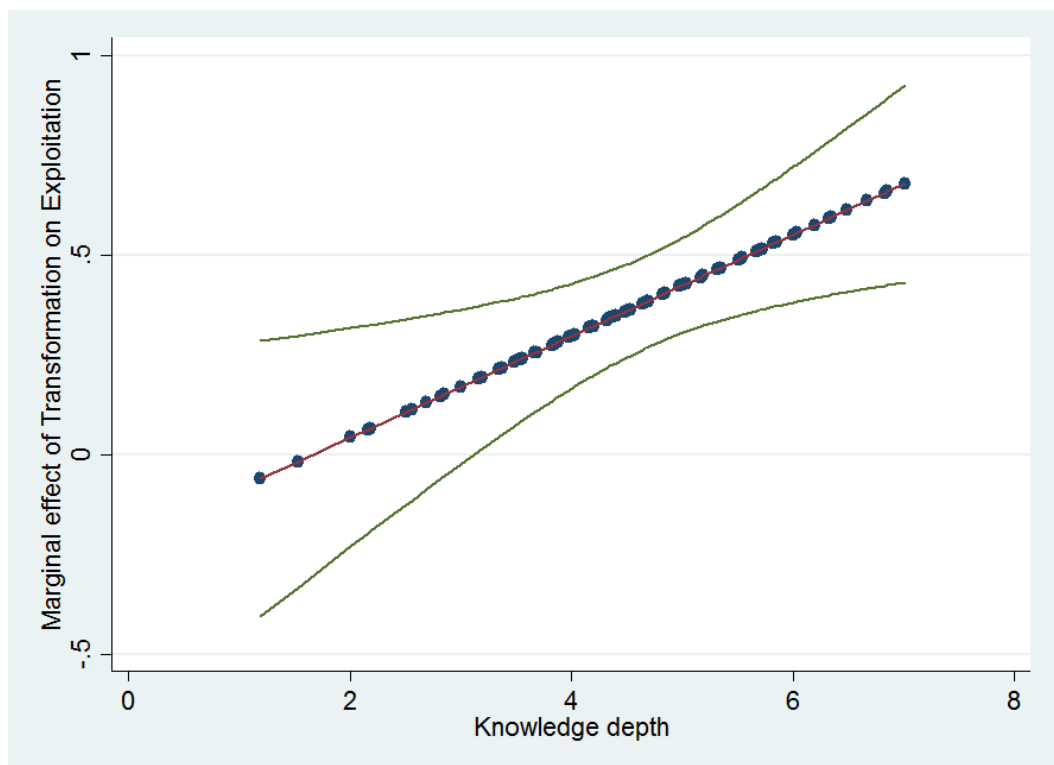
Note: N=292.



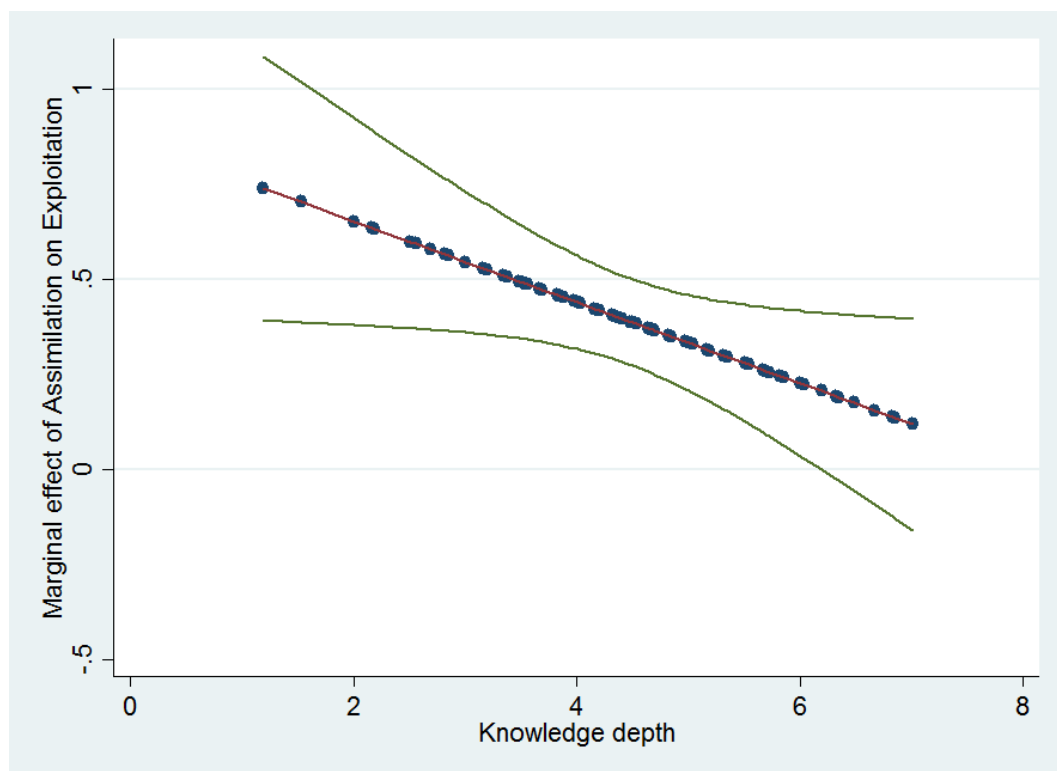
**Figure 5: The marginal effect of knowledge acquisition on transformation at value of knowledge specificity**



**Figure 6: The marginal effect of transformation on knowledge exploitation at value of knowledge depth**



**Figure 7: The marginal effect of assimilation on knowledge exploitation at value of knowledge depth**



Further, I estimated the indirect relationship between knowledge acquisition and exploitation using bias-corrected bootstrapped 95% confidence intervals (CI) at  $\pm 1$  standard deviation of moderators. As shown in Table 13, all moderators returned significant results at both low and high levels of the moderators, as 95% confidence intervals were positive and did not contain zero. This suggested that the indirect relationships are allowed to vary depending on the focal moderators. I then specifically compared each moderator at both high and low values of knowledge specificity. The indirect relationship between knowledge acquisition and exploitation through transformation was significantly larger at a high level of knowledge specificity ( $0.186 > 0.120$ ) and also at a high level of knowledge depth ( $0.212 > 0.095$ ).

As expected, the indirect relationship between knowledge acquisition and exploitation through assimilation was significantly smaller at a high level of knowledge depth ( $0.133 < 0.247$ ) and, unexpectedly, it was significantly higher at high level of knowledge specificity ( $0.214 > 0.166$ ). Overall, this additional evidence also supports Hypotheses 2a, 3a, and 3b. However, Hypotheses 2b was not supported.

**Table 13: Estimates and bias-corrected bootstrapped 95% confidence intervals for the conditional indirect relationship between knowledge acquisition and exploitation at  $\pm 1$  standard deviation of moderators**

<b>Moderator</b>	<b>Level of estimate</b>	<b>Transformation as a mediator</b>		<b>Level of estimate</b>	<b>Assimilation as a mediator</b>	
		<b>Estimate (SE)<sup>a</sup></b>	<b>95% CI</b>		<b>Estimate (SE)<sup>a</sup></b>	<b>95% CI</b>
Knowledge specificity (first-stage moderated mediation)	<b>-1 SD</b>	0.120 (.038)	[0.059, 0.208]	<b>-1 SD</b>	0.166 (0.040)	[0.097, 0.259]
	<b>+1 SD</b>	0.186 (0.043)	[0.115, 0.289]	<b>+1 SD</b>	0.214 (0.047)	[0.133, 0.318]
Knowledge depth (second-stage moderated mediation)	<b>-1 SD</b>	0.095 (0.047)	[0.018, 0.206]	<b>-1 SD</b>	0.247 (0.056)	[0.148, 0.371]
	<b>+1 SD</b>	0.212 (0.046)	[0.133, 0.316]	<b>+1 SD</b>	0.133 (0.047)	[0.049, 0.235]

**Note:** N = 292; 95% CI = confident intervals are based on bootstrap samples. <sup>a</sup> Bootstrapped estimates for the standard error (SE) are presented.

#### 4.4.3 Robustness test

Alternative variables for focal constructs were tested. When depth of technological learning (Zahra, Ireland, & Hitt, 2000) was utilized as an alternative for knowledge depth, the results for Hypotheses 3a and 3b remain similar to what this study reported earlier. That is, the cross-product term transformation\*knowledge depth remains positively significant with knowledge exploitation ( $B=0.148$ ,  $SE=0.070$ ,  $p=0.037$ ) and the interaction between assimilation and knowledge depth is still negatively and significantly related to knowledge exploitation ( $B=-0.150$ ,  $SE=0.068$ ,  $p=0.028$ ). In another test, I used the average value obtained from two respondents of each firm for variables *knowledge specificity* and *knowledge depth*. While the cross-product term of Acquisition\*Specificity remains insignificantly associated with assimilation ( $B=0.044$ ,  $SE=0.056$ ,  $p=0.439$ ), the association between Acquisition\*Specificity and transformation turned out to be practically significant at  $p=0.1$  ( $B=0.089$ ,  $SE=0.055$ ,  $p=0.105$ ). Again, the empirical results for both Hypotheses 3a ( $B=0.132$ ,  $SE=0.062$ ,  $p=0.033$ ) and 3b ( $B=-0.118$ ,  $SE=0.063$ ,  $p=0.063$ ) are consistent. Therefore, the results are practically consistent with the original estimation (Table 12), and significant causal relationships remain valid when using alternative variables for focal constructs.

To further test the robustness of the focal moderators (i.e., knowledge specificity and depth), this study followed multiple-group SEM analysis procedures suggested by Song, Droge, Hanvanich, and Calantone (2005). The multi-group analyses allowed us to test whether mediated paths should be allowed to vary in strength between sub-groups. Table 14 Model 1, includes the baseline model where I constrained for the control variables, factor loadings, Transformation-Exploitation (Path3), and Assimilation-Exploitation (Path4), while Acquisition-Transformation (Path1) and Acquisition-Assimilation (Path2) were allowed to vary between sub-groups split by the mean value

of knowledge specificity. All subsequent models in Table 14 imposed certain constraints on the baseline model against the hypothesized moderating effects. Notably, Model 2 constrained all four paths involved in the mediated pathways (paths 1-4); Model 3 constrained paths 1, 3, and 4; and Model 4 constrained paths 2, 3, and 4. All models returned significant results from chi-square difference tests against the baseline model, suggesting the baseline model fits the data better when the mediating paths are allowed to vary in strength contingent upon knowledge specificity, whereas constraining the mediating pathways, despite the different levels of the moderator, significantly worsened the model fit.

**Table 14: Multi-group SEM analysis for the moderating effect of knowledge specificity**

	Model 1: Paths 3 and 4 constrained	Model 2: Fully constrained	Model 3: Paths 1,3,4 constrained	Model 4: Paths 2,3,4 constrained
<b>Low Knowledge Specificity</b>				
Acquisition-Transformation (Path1)	0.601***	0.716***	0.723***	0.610***
Acquisition-Assimilation (Path2)	0.750***	0.859***	0.777***	0.860***
Transformation-Exploitation (Path3)	0.434***	0.420***	0.427***	0.434***
Assimilation-Exploitation (Path4)	0.482***	0.455***	0.474***	0.465***
<b>High Knowledge Specificity</b>				
Acquisition-Transformation (Path1)	0.970***	0.716***	0.723***	0.851***
Acquisition-Assimilation (Path2)	1.113***	0.859***	0.982***	0.860***
Transformation-Exploitation (Path3)	0.434***	0.420***	0.427***	0.434***
Assimilation-Exploitation (Path4)	0.482***	0.455***	0.474***	0.465***
Chi-square ( $\chi^2$ )	1189.19	1204.937	1201.271	1198.657
<i>df</i>	651	653	652	652
$\Delta \chi^2$		15.747	12.081	9.467
$\Delta df$		2	1	1
<i>p</i> -value		0.0004	0.0005	0.0021

**Note:** Sub-groups divided by mean; \*\*\*  $p < 0.001$ ; control variables are excluded from this table for brevity.

Specific to Hypotheses 2a, the results of Model 1 indicate that the coefficients of Acquisition-Transformation (path1) were larger ( $0.970 > 0.601$ ) when there was a high level of knowledge specificity than when there was a low level of knowledge specificity. The difference in strength for path 1 was statistically significant as shown by the model chi-square difference test of Model 3 ( $\Delta\chi^2_{(1)}=12.081, p<0.001$ ), as constraining path 1 between the sub-groups significantly worsened the model fit. For Hypotheses 2b, unexpectedly, the coefficients of Acquisition- Assimilation (path2) were larger ( $1.113 > 0.750$ ) when there was a high level of knowledge specificity than when there was a low level of knowledge specificity. The model chi-square difference test of Model 4 ( $\Delta\chi^2_{(1)}=9.467, p<0.001$ ) was statistically significant signifying the difference in strength for path 2. Again, this result was not consistent with the regression result.

Regarding Hypotheses 3a and 3b, this study used similar procedures to test the moderating effect of knowledge depth. In Table 15, Model 1 (baseline model), I constrained for control variables, factor loadings, Acquisition-Transformation (Path1), and Acquisition-Assimilation (Path2), but allowed Transformation-Exploitation (Path3) and Assimilation-Exploitation (Path4) to vary between sub-groups (using a mean split). Other subsequent models in Table 15 impose certain constraints on the baseline model against the hypothesized moderating effects. All chi-square difference tests against the baseline model were significant and indicated that there was a better fit of Model 1 when the mediating paths were allowed to vary in strength upon knowledge depth. Given the significant result of the model chi-square difference test of Model 3 ( $\Delta\chi^2_{(1)}=6.208, p<0.05$ ) and Model 4 ( $\Delta\chi^2_{(1)}=4.585, p<0.05$ ) that signify the difference in strength of Transformation-Exploitation (Path3) and Assimilation-Exploitation (Path4) respectively, I then compared its coefficients of this path in Model 1. This study found that path 3 ( $0.533 > 0.148$ ) is significantly larger with a high level of knowledge depth than with a low level of knowledge depth, whereas path 4 ( $0.533 > 0.148$ ) is significantly



smaller with high level of knowledge depth than with a low level of knowledge depth.

This evidence is also consistent with regression results.

Overall, this study concludes that the results for Hypotheses 2a, 3a, and 3b were robust as the results were consistent across the robustness tests. However, Hypothesis 2b is inconclusive as the results were not supported by the regression results obtained through a SPSS PROCESS macro, and the robustness test using multiple-group SEM analysis even produced contradictory findings.

**Table 15: Multi-group SEM analysis for the moderating effect of knowledge depth**

	<b>Model 1: Paths 1 and 2 constrained</b>	<b>Model 2: Fully constrained</b>	<b>Model 3: Paths 1,2,3 constrained</b>	<b>Model 4: Paths 1,2,4 constrained</b>
<b>Low Knowledge Depth</b>				
Acquisition-Transformation (Path1)	0.750***	0.744***	0.743***	0.744***
Acquisition-Assimilation (Path2)	0.880***	0.874***	0.874***	0.873***
Transformation-Exploitation (Path3)	0.148(n.s.)	0.406***	0.408***	0.314**
Assimilation-Exploitation (Path4)	0.602***	0.479***	0.462***	0.450***
<b>High Knowledge Depth</b>				
Acquisition-Transformation (Path1)	0.750***	0.744***	0.743***	0.744***
Acquisition-Assimilation (Path2)	0.880***	0.874***	0.874***	0.873***
Transformation-Exploitation (Path3)	0.533***	0.406***	0.408***	0.443**
Assimilation-Exploitation (Path4)	0.290*	0.479***	0.433***	0.450***
Chi-square ( $\chi^2$ )	1207.921	1214.226	1214.129	1212.506
<i>df</i>	651	653	652	652
$\Delta \chi^2$		6.305	6.208	4.585
$\Delta df$		2	1	1
<i>p</i> -value		0.0427	0.01272	0.0323

**Note:** Sub-groups divided by mean; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; n.s.=non-significant; control variables are excluded from this table for brevity.

## 4.5 Discussion and Conclusion

This study investigated knowledge characteristics as contingencies of the parallel pathways of the ACAP model via transformation and assimilation, by contextualizing the ACAP model in the GVC setting where technologically-backward EE firms interact with foreign partners as external knowledge sources through transactional activities. The overall results support the baseline hypotheses that assimilation and transformation are parallel learning pathways, and further reveal knowledge specificity and depth as contingencies of the parallel pathways model.

The current research found that the specificity feature of external knowledge moderated the acquisition-transformation pathway, however, its moderating effect was inconclusive on the acquisition-assimilation pathway. A possible explanation is that the properties of specific knowledge may have an enabling role in strengthening a firm's implementation of the assimilation pathway to ensure early settlement of communication difficulties, and to allow timely flow of information between different functional units (Luca & Atuahene-Gima, 2007), which in turn reinforces the transformation process. This unsupported result may also signify the distinctiveness of the EE context from non-EE one, which deserves further exploration. Perhaps, the context of EE firms makes the relationship suggested by non-EE context literature different.

In addition, knowledge depth was found to positively moderate the transformation-exploitation relationship whereas it negatively moderated the assimilation-exploitation relationship. Hence, for learning firms from emerging economies, the transformation process allows a greater benefit of knowledge transfer when the knowledge acquired has more depth, while assimilation is useful when the acquired knowledge involves instruction-type knowledge (that is, it only explains what works, but not why it works) that improves peripheral activities without inducing

conflicts from adding new knowledge domains and logics, as opposed to in-depth knowledge that works well with the transformation process to recombine new knowledge domains and logics to update core competencies.

#### **4.5.1 Theoretical contributions**

This study makes three main contributions. First, based on the parallel pathways of the ACAP model, this study extends the model by taking into account its contingencies in the GVC context. I highlight key knowledge characteristics as contingencies in the model which determine the way in which the firms respond to heterogeneous external knowledge, and the relative effectiveness of the two ACAP processes on knowledge exploitation. By doing so, this study responded to the call to integrate the role of knowledge attributes in the ACAP components and processes (Jansen, Van den Bosch, & Volberda, 2005, Volberda, Foss, & Lyles, 2010) and to investigate the influence of knowledge type on utilization stage (Lane, Koka, & Pathak, 2006).

Second, previous ACAP literature suggests a learning firm's ability to absorb external knowledge is regarded as a function of the similarity/overlap of external knowledge with their existing knowledge stock (Darr & Kurtzberg, 2000, Lane & Lubatkin, 1998). Nevertheless, searching and acquiring external knowledge characterized by breadth, depth, distance, and/or diversity (Laursen & Salter, 2006, Terjesen & Patel, 2017, Vasudeva & Anand, 2011) is increasingly important for firms as those knowledges offer greater value and increasingly become a part of firm's strategy. The model illustrates that, given the contingencies of the ACAP parallel pathways, the learning firm can achieve a match between the various knowledge characteristics and information-processing processes employed by their organization. This match determines how effectively the externally acquired knowledge can be exploited (Subramaniam & Venkatraman, 2001). The findings add to the understanding

of the heterogeneity of firms in handling the diverse characteristics of the knowledge being transferred (e.g., Asmussen, Foss, & Pedersen, 2013, Szulanski, Ringov, & Jensen, 2016, Todorova & Durisin, 2007). The implication for researchers adopting the ACAP concept is that inter-firm learning is not restricted to assimilation logic (that is, similarity or prior relevant knowledge stock), but is also possible with accommodation logic (which perhaps involves organizational slack in various forms), especially when firms learn the incongruent set of distant and complex knowledge transmitted from advanced GVC partners. In this regard, we have to reconsider the efficient ratio of Realized ACAP/ Potential ACAP (Zahra & George, 2002) and perhaps turn the focus to the balance between accommodation and assimilation capacity in different organizational functions.

Third, this study extends ACAP research into the context of learning by EE firms from GVC linkages and adds empirical evidence for further debate. GVC literature considers that plugging EE firms into the value chains should be a path for them to upgrade their capabilities. However, the GVC approach offers limited understanding about the learning mechanisms of the learning firm. This paper helps to clarify the processes and conditions under which EE firms achieve their learning from acquiring the knowledge transmitted within GVC linkages. The findings suggest transformation is a crucial internal process that enables inter-firm learning capabilities, especially when the learning firm possesses uneven knowledge in comparison with advanced GVC partners. This is because transformation allows the learners to alter their perceptual schema in accordance with dominant foreign partners to accommodate the incongruent set of external knowledge into the learning firm. Hence, this study also responds to Zhou and Li (2012) who pointed to the need to understand which capabilities enable firms to benefit from external knowledge acquisitions. This finding has an implication for our understanding of the variations in learning and upgrading by

EE firms, which may arise from an unbalanced set of transformation-based and assimilation-based ACAP.

It is important to note that although the parallel pathways of ACAP is argued to suite the context of EE firms operating in GVCs, the variables themselves are not GVC-specific; thus, the results may also have a general implication to learning firms, especially those having incongruent level of knowledge in comparison with advanced partners not necessary in the GVC setting.

#### **4.5.2 Managerial implications for learning firms from emerging economies**

In the context of GVC linkages, EE firms may deal with transmitted knowledge that cannot directly assimilated and fully understood by them as EE firms and advanced GVC partners operate from two different logic perspectives, and therefore some knowledge may not be a current focus of the EE firm and far from their cognition and understanding. To benefit from diverse and advanced knowledge in GVCs, EE firms must be receptive to distant knowledge; that is, they need to develop a transformation process in parallel with assimilation process by changing their way of thinking and doing in order to incorporate new knowledge into their operations, and thereby achieving effective knowledge exploitation.

The findings directly advise the learning firm on how to respond to external knowledge. If the knowledge is specific to the sources, that knowledge may not fit the logic and practices of the learning firm. The firm and their employees may not be able to realize the value of the knowledge as they lack the necessary pre-existing knowledge stock and perceptual thinking to comprehend that knowledge. To realize its value, the learning firm requires a transformation process through which to learn how to remove outdated knowledge and update their perceptual thinking to accommodate the

unfamiliar knowledge into their own organizational routines with minimal misunderstandings and misapplications.

In addition, assimilation and transformation pathways have different implications for learning firms from emerging economies. Assimilation is useful when the learning firm requires external knowledge that is instructional-type or ready-to-use to improve peripheral activities and/or is to be accumulated on top of their existing knowledge stock in a linear fashion, rather than with the aim of renewing its core competencies. On the other hand, if the target knowledge to be acquired is sophisticated, a transformation pathway better allows the learning firm to maximize the benefits of in-depth knowledge that contributes to the firm's core knowledge and competencies. That is, transformation helps replace and recombine the existing knowledge with core technical and market knowledge in a non-linear fashion.

Further, when the level of knowledge between the learning firms and advanced firms is uneven, the transformation pathway is more effective for the learner firms as transformation facilitates the accommodation of new core knowledge domains and logic into the updated cognitive and knowledge structure of the learning firm. It also helps curb the knowledge transfer costs between the partners (e.g., costly misunderstandings associated with decoding and utilizing that specific and in-depth knowledge), thereby achieving greater benefits from the knowledge transmitted between the firms. If the learning firm only reinforces the assimilation pathway, it may cause an inertia (Tripsas *et al.*, 2000) in updating their skills and competencies as they are constrained to only minor improvements and their current customer segments (Levinthal & March, 1993).

#### **4.5.3 Limitations and recommendations**

As the empirical design of this study is a single country context, the implications for learning firms in other contexts should be interpreted with caution. Extending this

research to other emerging economies is suggested in order to potentially improve the generalizability of these findings. Future studies examining particular industries and/or institutional contexts may add more evidence to the theoretical development of the parallel pathways of ACAP.

Although this study utilized some techniques to avoid common methods variance and used actual data when possible, this research is limited in that some variables were perceptual or self-reported data from top and senior managers. The design of this study was also limited due to the survey questions asking for information that is retrospective (i.e., from within certain time periods). While this technique allows respondents to recall and recognize the development of the firms, they may not clearly delineate what happened during those specific time periods. Future research using secondary, external data sources would allow cross validation with the self-reported data by respondents. Also, this study did not conduct surveys in a dyadic form. Future research could utilize data from both teaching and learning firms so as to gain a more comprehensive perspective on inter-firm learning.

Overall, this study has enriched the contemporary debate about the ACAP process in the context of GVCs, where knowledge characteristics exercise their influences on the learning pathways of learner firms. It is my hope that the current study will stimulate discussion and offer a new perspective for future research on the learning journey of firms from emerging economies, especially within the GVC context. This paper sheds light on some potential avenues for future research. First, as the findings have not provided a clear picture on how knowledge specificity triggers the acquisition-assimilation relationship, re-examining its role could give scholars a more robust conclusion. Second, an incongruent set of external knowledge requires accommodation via transformation rather than by assimilation, and future studies could unpack the components of accommodation capabilities and capacities in different functional areas



within organization. Clarifying these capabilities and capacities is a stepping stone to, (i) understanding what constitutes an accommodation capacity in different organizational settings which allows a firm to continuously update their knowledge structure, and (ii) determining whether the firm is ready to obtain distant and sophisticated knowledge. Third, one may suspect a recursive relationship between assimilation and transformation (Todorova & Durisin, 2007). That is, assimilation may reinforce transformation in parallel when dealing with specific knowledge and vice versa. Investigation into the complex, recursive relationship between transformation and assimilation in the parallel pathways of the ACAP model could expand our understanding of the ACAP process. Last, as this study has established that the parallel pathways of the ACAP model is contingent on heterogeneous knowledge features, future research could consider other meaningful knowledge features, or even introduce new ones (See Foss, 2007).

## CHAPTER 5

### Study 3: Embeddedness in Global Value Chains and Internationalization of Emerging Economy Firms

**Research Summary:** Emerging economy firms are often resource-dependent on their foreign supply chain partners for global success. The embeddedness logic of the resource dependence theory explains the potential resource exchange and learning between transactional partners, while power/autonomy logic explains their bargaining power positions. Following embeddedness logic, this study examines the relationship between the relational embeddedness of emerging economy firms in the global supply chain and their future engagement in internationalization. The empirical analyses, based on a survey of 291 Thai manufacturing firms, suggest that product development involvement (a proxy for relational embeddedness), positively relates to the subsequent degree of their internationalization. Furthermore, the positive relationship between product development involvement and their future internationalization is strengthened by the learning contingency associated with the geographic diversity of GVC partnerships, as geographic dispersion reduces the dependence of emerging economy firms on a particular partner for power/autonomy, thereby allowing greater knowledge leverage from multiple resource providing partners.

**Keywords:** Transactional embeddedness; Relational embeddedness; Degree of Internationalization; Resource dependence theory; Linkage-Leverage-Learning (LLL)

## 5.1 Introduction

Linkage with technologically-advanced foreign counterparts is an important source of competitive advantage for EE firms (Hitt, Li, & Worthington, 2005, Zahra, Ireland, & Hitt, 2000). The globally interconnected character of supply chains offers opportunities for EE firms to accumulate capabilities and to strengthen their market positions (Alcacer & Oxley, 2014, Mudambi, 2008, Saliola & Zanfei, 2009). Mathews (2006) added to the understanding of this phenomenon by proposing a Linkage-Leverage-Learning (LLL) framework illustrating how EE firms leverage their global linkages for their learning. This is conceptualized as a recursive process in which learning outcomes enable greater/deeper global linkages that can be further leveraged (Hung & Tseng, 2017, Lu, Ma, Taksa, & Wang, 2017, Mathews, 2017). However, there is a paradox for EE firms in participating global value chains (GVCs). Foreign counterparts usually put pressures on EE firms to compete against each other on price and profit margins, which can lead to relationship instability (Schmitz, 2006). GVC linkages are thus not always conducive for learning by EE firms; rather, EE firms face challenges in ensuring the benefits from a GVC partnership in term of learning and increasing engagement in the global economy. Failing to realize the expected benefits of global linkages, some participating EE firms may not be motivated to strengthen GVC linkages, but gradually reduce their commitment in international markets or eventually exit the GVC as a result. Given that there are variations in EE firms' motivation and capability to exploit their global linkages for future international market expansion, this study aims to investigate the influence of EE firms' GVC activities on their future commitment to global linkages.

A GVC linkage comprises of a relationship that is both mutual and power dependent which participating EE firms have to manage in order to benefit from. To date, it remains unclear as to which linkage characteristics EE firms can leverage to

achieve the learning that will in turn allow them to develop additional linkages with foreign counterparts. The current study aims to address this knowledge gap by examining a particular type of GVC linkage and its influence on the future internationalization of EE firms.

To specify the linkage characteristics EE firms can leverage from GVC linkages, this study draws on the embeddedness logic (Gulati & Sytch, 2007) of resource dependence theory (RDT) (Pfeffer & Salancik, 2003). The embeddedness in exchange relationships has important implications on the resource exchange between partners and thereby their overall performance (Gulati & Sytch, 2007, Xia, Ma, Lu, & Yiu, 2014). By applying such logic to the context of EE firm linkages in GVCs, where they are dependent on GVC partners due to supply chain integration activities (Crook & Combs, 2007), this study highlights relational embeddedness in GVC partnerships as distinct from transactional embeddedness in arms-length relationships. Transactional embeddedness stems from the magnitude of the economic transactions in arms-length or trade relationships (Gulati & Sytch, 2007, Xia, 2011) and captures the extent to which a firm is dependent on the current transactional relationship and thereby motivated to strengthen it. Relational embeddedness, on the other hand, gauges a collaborative relationship among partners on value-creation activities within exchange relationships. This embeddedness is also reflected in the importance of a focal firm's value creation roles and/or competencies (Hite, 2003, Moran, 2005) in contributing to its partner's competitiveness by making itself an integral part of the partnership. The current study maintains that relational embeddedness is more appropriate in the context of a GVC partnership where partners are integrated in various operational processes (Crook & Combs, 2007, Gereffi, Humphrey, & Sturgeon, 2005), and can be captured by product development involvement as it reflects the extent to which exchange partners are embedded in the organized network of both interpersonal and competence-based

interactions, that offer opportunities to engage in supply integration, information exchange, and innovation (Croom, 2001, McIvor & Humphreys, 2004).

In the context of GVCs, the relational embeddedness (i.e., through value-adding roles in product development) of an EE firm determines the importance of the partnerships to the focal EE firm both as a source of revenue generation and as a platform of knowledge resources and value creation. High embeddedness, therefore, enables learning by EE firms as well as motivating them to make further commitments to the GVC partnership. Further, the future international engagement of EE firms is contingent upon the international dispersion of knowledge and revenue sources as well as the organizational characteristics of EE firms. From the power/autonomous logic of the RDT perspective, EE firm can stabilize and increase the flow of critical knowledge and resources when it has alternative sources for the same or substitutable knowledge and resources (Xia, Jiang, Li, & Aulakh, 2014). Future engagement in GVC linkages is thus expected to be greater when the EE firm plays a value-creation role while having greater geographical dispersion of GVC partners (as alternative and flexible sources of revenue and knowledge). Nevertheless, the learning benefit on future GVC linkages may vary due to the learning inertia associated with the aging process of EE firms.

Empirically, this study utilizes survey data from 291 Thai manufacturers partaking in GVCs in six major industries. Thai manufacturers are increasingly participating in GVCs, largely propelled by the influence of significant inward internationalization in the form of foreign direct investment (FDI) since the mid-1980s (Pananond, 2013). The devaluation of Thai currency and the amendment of foreign investment regulations during the Asian financial crisis in 1997-1999 also significantly attracted inward FDI into Thailand, thereby deeply integrating the Thai economy into GVCs. To date, due to the limited size of the Thai market, Thai firms have used GVCs as a platform to reach wider markets and to simultaneously learn to compete in the

global economy, making GVC participation virtually unavoidable for the growth of Thai firms. Thailand thus represents an ideal location for this study due to its high dependence on global linkages as suppliers in GVCs.

This study found empirical support for the relationship between product development involvement by EE firms and their future degree of internationalization (DOI). While firm age did not show a significant moderating effect, geographic dispersion of GVC partnerships did strengthen the positive association between product development involvement and future DOI, which is consistent with the combination of embeddedness and power/autonomous logic of RDT. This study makes three key contributions to the current knowledge about the internationalization of EE firms. First, it develops a framework based on the embeddedness logic of RDT to examine subsequent engagement in internationalization by EE firms in GVC settings, which is a step towards understanding the recursive process whereby the current linkages EE firms have within a GVC vary along relational embeddedness, and are related to the future degrees of international linkages by EE firms. Second, this study integrates relational embeddedness and multinationality to explain future internationalization (Contractor, Kundu, & Hsu, 2003, Hennart, 2011, Verbeke & Brugman, 2009) and to extend understanding of how EE firms combine value-creation roles and partnership portfolios to configure GVC linkages that enable their learning. Third, the current research enriches the LLL framework by highlighting linkages characterized by relational embeddedness (e.g., product development involvement) are crucial for the future internationalization of EE firms, in the sense that such linkages allow for learning and leveraging deeper global linkages.

## **5.2 Theory and Hypotheses**

### **5.2.1 Resource dependence theory**

Although there might be alternative perspectives (e.g., learning perspective of absorptive capacity) to explain subsequent internationalization, I decided to adopt resource dependence theory because the theory considers power and dependence relationships that is one of the key characteristics in GVCs. Resource dependence theory (Pfeffer & Salancik, 2003) suggests that the exchanges between an organization and its environment (e.g., individuals, firms, groups, and/or governments) create power and dependence relationships. Specifically, power imbalance (that is, the power differential between two organizations in a relationship) and mutual dependence (the sum of the dependencies between two organizations in a relationship) have attracted much scholarly attention (Casciaro & Piskorski, 2005, Emerson, 1962, Gulati & Sytch, 2007). As Gulati and Sytch (2007) pointed out, while power imbalance operates on the logic of power, mutual dependence is based on the logic of embeddedness. They further contend that these two facets of dependence imply different forms of exchange relationships and consequently future performance.

From the logic of power, organizations are vulnerable entities whose survival depends on the exchange of vital resources with other actors (Gulati & Sytch, 2007). They thus strategically engage in different forms of inter-firm relationships to address power imbalances and dependence on the organizations on whom they depend for critical resources (Drees & Heugens, 2013, Pfeffer & Salancik, 2003). For example, a mechanism to reduce power and dependence is to form alliances, joint ventures, mergers and acquisitions, and/or boards of directors among inter-dependent firms (Hillman, Withers, & Collins, 2009). These inter-firm formations can facilitate access to the knowledge and resources of partner firms, allowing for opportunities to broaden knowledge bases, develop capabilities, and jointly formulate and implement strategies

(Drees & Heugens, 2013, Meyer, Estrin, Bhaumik, & Peng, 2009). On the other hand, the embeddedness logic underlying mutual dependence highlights relational orientation that goes beyond contractual obligation to richer and deeper interactions for generating total value and performance impacts co-created by the exchange partners (Gulati & Sytch, 2007). Notably, much research on dependence relationships is based on the notion of power and control (Kim & Choi, 2018, Peng & Beamish, 2014, Xia, Jiang, Li, & Aulakh, 2014, Xia & Li, 2013). While studies adopting mutual dependence stemming from embeddedness logic as a key construct still draw on the view of economic transactions in arm's length or trade relationships (such as Gulati & Sytch, 2007, Xia, 2011, Xia, 2010, Xia & Li, 2013, Xia, Ma, Lu, & Yiu, 2014). Studies dealing directly with embeddedness also focus on social ties (Rowley, Behrens, & Krackhardt, 2000, Uzzi & Lancaster, 2003) and pay attention to relational embeddedness which relies on interpersonal trust, shared processes and values (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004), commitment, and satisfaction (Kaufman, Jayachandran, & Rose, 2006). Much less attention has been given to the nature of value-creation or the competence dimension in embeddedness between partners (Hite, 2003, Moran, 2005), and instead value creation has been treated as an outcome of relational embeddedness (e.g., Bonner & Walker, 2004, Kim & Choi, 2018). This study shifts the focus of mutual dependence from transactional embeddedness to the relational embeddedness that stems from the value creation role (e.g., through product development involvement) through which a focal firm contributes to its partner's competitive advantage, and highlight product development involvement as a more appropriate construct for relational embeddedness in GVC linkages, as it captures the extent to which exchange partners embed themselves in the organized network of both interpersonal and competence-based interactions in a GVC partnership.



### **5.2.2 Embeddedness logic of resource dependence theory**

The mutual/joint dependence argument in RDT stems from embeddedness logic. Joint dependence reflects the notion of relationship's controlling nature (Emerson, 1962) which results in the heightened attention of each partner to the responses and attitudes of the other, such that the structural parameters of the relationship can govern and change the dispositions of the partners in a dyad (Gulati & Sytch, 2007). Some studies (e.g., Provan, 1993, Provan & Gassenheimer, 1994) reveal that more powerful firms are less likely to exert power and control over weaker partners when they are in an embedded relationship, and are more likely to benefit from knowledge and resource exchanges.

Apart from mitigating the uncertainty associated with unequal power, high levels of mutual dependence can promote more accommodating and cooperative behavior among exchange partners (e.g., Buchanan, 1992, Uzzi, 1996). The cooperative orientation stems from, (i) the increasing sentiment of highly dependent relationships, and (ii) the more calculative rationale of the partners who have high stakes in maintaining a smooth relationship (Gulati & Sytch, 2007). The embeddedness logic also suggests a higher level of mutual dependence will strengthen the depth of the economic interaction in terms of joint involvements, higher trust, and increased information exchange (Uzzi, 1996, Zaheer & Venkatraman, 1995). The partners in such a relationship tend to focus on joint success and embrace long-term horizons for the relationship, because the highly dependent relationships elevate the levels of identification partners have with each other through the convergence in their values, attitudes, and goals (Gulati & Sytch, 2007).

Mutually dependent interactions also have implications for the subsequent performance of exchange partners. Increased dependence and joint involvement, as Gulati and Sytch (2007) argued, tend to foster the attitudinal convergence and structural

congruence of partners with each other, resulting in lower conflicts in communication, negotiation, and operations that may cause unnecessary transaction costs. Further, as both parties rely on non-adversarial tactics and refrain from immediate self-interest for the benefit of the relationship, stability and continuity tends to be promoted in the relationship, which sets the foundations for value co-creating potential through cooperation and exchange (Subramani & Venkatraman, 2003). For instance, MacDuffie and Helper (1997) found that mutual adjustment and inter-firm learning in collaborative relationships between a buyer and its suppliers leads to the superior subsequent performance of both parties. Similarly, mutual dependence provides opportunities for the supplier firms to upgrade their abilities (Inemek & Matthyssens, 2013).

Drawing from embeddedness logic and its implications for resource exchange between partners, this study distinguished relational from transactional embeddedness, and investigate the linkages characterized by relational embeddedness to predict future engagement in internationalization activities by EE firms. As explained earlier, transactional embeddedness focuses on the extent to which a firm is dependent on the extant partner in terms of the magnitude of the economic transaction in arms-length or trade relationships, whereas relational embeddedness emphasizes the role of the focal firm in contributing to value-creation activities in the exchange relationship, and its importance as an integral part of the partner's competitive advantage. Specifically, this study discusses the value-creation role EE firms play in GVCs through product design and development (an indicator of relational embeddedness) and its association with the subsequent degree of internationalization of the firms.

### **5.2.3 Relational embeddedness - Product development involvement**

Product development involvement, I argue, is a specific characteristic of linkage based on relational embeddedness. Product development involvement is important for EE firms in GVCs because a higher level of product development involvement implies a

larger extent to which EE firms play an increasing value-creation role for their foreign counterparts and are embedded in the GVC partnership. Kim and Choi (2018) maintained that, at the collective level, value creation means a global buyer engages its EE supplier firm to work closely in various inter-firm activities, from supplier development to joint product development. Not only do these activities involve novel allocations, combinations, and/or synergies of the resources, capabilities, technologies, skills and know-how, routines, and interface systems of the partners across multiple functions between the two parties, they also reflect the moral support and acceptance expected from each partner, which fosters the partners to pursue creative experiments with mutually available resources in a supportive atmosphere, resulting higher quality products, cutting-edge production methods, and/or information on new technologies (Kim & Choi, 2018).

Value-creation roles by EE firms can also promote mutual dependence in exchange relationships due to the innovative features of the product and the unique skills possessed by EE firms which may make them more important to foreign customers (Hansen & Rasmussen, 2013), and also due to the availability of substitutable products from the sources being drastically reduced if their innovative features are unique (Kamath & Liker, 1990). Further, the increasing role and responsibility in product development involvement could increase the dependence among partners (Crook & Combs, 2007, Dowlatshahi, 1999), which in turn strengthens mutual dependence between all parties.

Through product development involvement, increased relational embeddedness leads to stronger coordination between parties (e.g., EE supplier firms and foreign buyers) and increases their information exchange, cooperation, and performance (Gulati & Sytch, 2007, Uzzi, 1996). As such, this study expects that linkages characterized by product development involvement is a learning source that can be leveraged by EE

firms to increase their knowledge and capabilities for further engagement with internationalization activities. Supply chain literature has highlighted that product development involvement offers opportunities for suppliers to engage in integration and information exchange in more depth (McIvor & Humphreys, 2004) and to collaborate in innovation processes (Croom, 2001), which will help drive their innovative activities (Inemek & Matthyssens, 2013). Other scholars also found the involvement of EE firms in design and R&D activities offer greater opportunities for learning by EE firms (Alcacer & Oxley, 2014, Saliola & Zanfei, 2009). They are likely to benefit from knowledge sharing with their customers and may be able to learn and acquire technical knowledge (LaBahn & Krapfel, 2000, Takeishi, 2001). The linkages characterized by product development involvement are therefore likely to expand the knowledge base and capabilities of EE firms.

From the benefits associated with product design involvement, this study argues that expanded knowledge and capabilities will ultimately have a positive influence on the future engagement in internationalization activities by EE firms. As an example, the knowledge and skills accumulated may offer opportunities for firms to have spin-offs in term of enlarger customer base or facilitate their entry into new markets (Kamath & Liker, 1990). Additionally, the product and design uniqueness belonging to EE firms will also increase the attractiveness of their outputs to new foreign customers. I therefore expect EE firms to achieve greater future and/or subsequent degrees of internationalization (DOI) as a result of relational embeddedness through product development involvement.

***Hypothesis 1: An EE firm's product development involvement in GVCs is positively related to its subsequent degree of internationalization.***

#### **5.2.4 The moderating effect of the geographic dispersion of the learning source**

In this section I incorporate another aspect of RDT, the logic of power/autonomy (Drees & Heugens, 2013), into the model and explain the moderating effect of the geographic dispersion of the GVC partnership as a learning contingency on the association between product development involvement and subsequent DOI. Product development involvement, based on the relational embeddedness of RDT, may not be sufficient to explain the variations in subsequent internationalization activities among EE firms. EE firms may be able to strengthen their internationalization activities by reducing their dependence on a particular foreign partner in terms of revenue generation and knowledge sources by engaging with other resource providing partners. This study expects that taking the power/autonomy aspect into account could improve the model of the future engagement of EE firms' in internationalization activities.

The power/autonomy logic of RDT considers actors in the environment (including suppliers, buyers, competitors, and regulators) as resource controllers, and describes firms as vulnerable entities whose survival depends on their exchange of vital resources with other actors in the environment (Gulati & Sytch, 2007). Firms are thus reciprocally dependent, constrained, and affected by other firms. A firm dependent on others could find themselves in a weak bargaining position (Wry, Cobb, & Aldrich, 2013). The implication of the power/autonomy perspective is to avoid dependence on other firms, while making others dependent on their own firms so that they can be in a better power/autonomy position in the exchange relationship (Hillman, Withers, & Collins, 2009). In this sense, dependence among one another is a liability that needs to be managed, as unequal dependence may cause a power imbalance (Casciaro & Piskorski, 2005) that is likely to be detrimental for dependent firms (Emerson, 1962).

For example, the importance of a foreign buyer to an EE firm [e.g., in terms of the financial magnitude of a transaction (Caniëls & Gelderman, 2007)], as well as

manufacturing competencies and knowledge (Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012)] may create excessive dependency or a weaker position for the EE firm when negotiating with its foreign counterparts. The power imbalance stemming from the EE firm's dependence on a foreign partner may cause relationship dissolution and create disruption and/or discontinuity with regard to resource flows (Xia, Jiang, Li, & Aulakh, 2014, Xia, Ma, Lu, & Yiu, 2014). In such circumstances, EE firms are incentivized to use strategies to balance the foreign partner's resource importance by establishing relationships with new partners to create substitutions for the original partner, thereby enhancing an EE firm's power and/or autonomy (Xia, Jiang, Li, & Aulakh, 2014). In other words, the resource-dependent EE firm has to tilt the power imbalance (Casciaro & Piskorski, 2005) to reduce uncertainties by either reducing its dependence on the foreign partner or increasing its power relative to that of the foreign partner to stabilize the flow of resource exchange (Xia, 2011, Xia, Ma, Lu, & Yiu, 2014).

In this research, I consider the diverse geographic scope of the GVC partnership as a source of autonomy and/or power and thus view it as a potential moderator on the relationship between an EE firm's product development involvement and their subsequent DOI. This study argues the diverse scope of a GVC's partners could increase autonomy and/or power and reduce dependence of EE firms on a particular foreign partner by having greater flexibility and diversity in revenue and learning sources. With an increase in power/autonomy, EE firms would be able to control and exploit internal resources effectively while simultaneously responding to the demands of multiple resource providing partners (Drees & Heugens, 2013). They may even be able to leverage knowledge and capabilities acquired from a key exchange partner to a wider set of customers outside the focal chain (Crook & Combs, 2007), thereby improving future internationalization activities.

Further, a wider scope of linkages characterized by product development involvement could stabilize and increase the flow of critical knowledge and learning resources (Xia, Ma, Lu, & Yiu, 2014). I expect EE firms will not be constrained by a limited set of partners in absorbing new critical knowledge as well as exploiting the acquired resources (Hitt, Dacin, Levitas, Arregle, & Borza, 2000). Studies have argued that having a diverse scope of partners in terms of the geographical dispersion of customers provides better access to dispersed resources. For instance, Kirca (2015) contended that increased geographical diversity of customers can enhance a firm's knowledge base, capabilities, and competitiveness through experiential learning as the firm has more opportunities to learn new and diverse ideas from a wider range of market and cultural perspectives. Similarly, Kim, Hwang, and Burgers (1993) suggested the diversity in the country of origin of partners exposes the firms to multiple stimuli which provides broader learning opportunities to develop more diverse capabilities than those available when there is only a limited set of customers.

Furthermore, multi-partner experiences could provide the opportunity to develop superior abilities to establish, manage, and work with additional linkages (Martin, Mitchell, & Swaminathan, 1995). Nobeoka, Dyer, and Madhok (2002) labelled them inter-organizational management capabilities which emerge from the accumulation of a firm's experience working with a variety of interfirm transactions (e.g., coordination skills). This study expects that the benefits associated with working with a diverse scope of GVC partners will also strengthen the coordination of product development between exchange partners.

With the rationale above, this study hypothesizes that geographic dispersion of GVC partnerships moderates the association between the product development involvement of EE firms and their subsequent internationalization performance. As noted by Thomas and Eden (2004), the more sources available to EE firms from which

to gain knowledge and learn techniques, the more EE firms could be enabled to take advantage of differences between foreign customers in internationalization activities. EE firms may be able to apply any wider knowledge gained to existing and new foreign customers, and subsequently increase their future engagement in internationalization activities. Nobeoka, Dyer, and Madhok (2002) also found that a large partner scope influenced the learning by, and performance of, firms as they benefit from a combination of both, (i) relationship-specific knowledge acquired through close coordination, and (ii) re-deployable knowledge obtained through a broader customer scope. Hence, the relationship between an EE firm's product development involvement and subsequent DOI, as discussed earlier, is expected to strengthen if they also have a diverse scope of GVC partners (see Figure 8).

***Hypothesis 2:** The geographic dispersion of GVC partnership of EE firm positively moderates the relationship between EE firm's product development involvement and its subsequent degree of internationalization such that the relationship is stronger when the geographic dispersion of GVC partnership is diverse as opposed to focused.*

#### **5.2.5 The moderating effect of learning inertia - Organizational age**

Another learning contingency is organizational age. Firm age is likely to moderate the learning of firms due to structural inertia. Structural inertia theory suggests that the aging process increases inertia and decreases organizational responsiveness to environmental change (Hannan & Freeman, 1984), as reflected by a firm's limited ability to make changes in its strategy, structure, and core organizational functions (e.g., goals, technology, and marketing).

This perspective views that, as organizations age, internal processes have had time to formalize and perpetuate existing routines and structures (Kelly & Amburgey, 1991), and therefore power structures become institutionalized, and relationships and



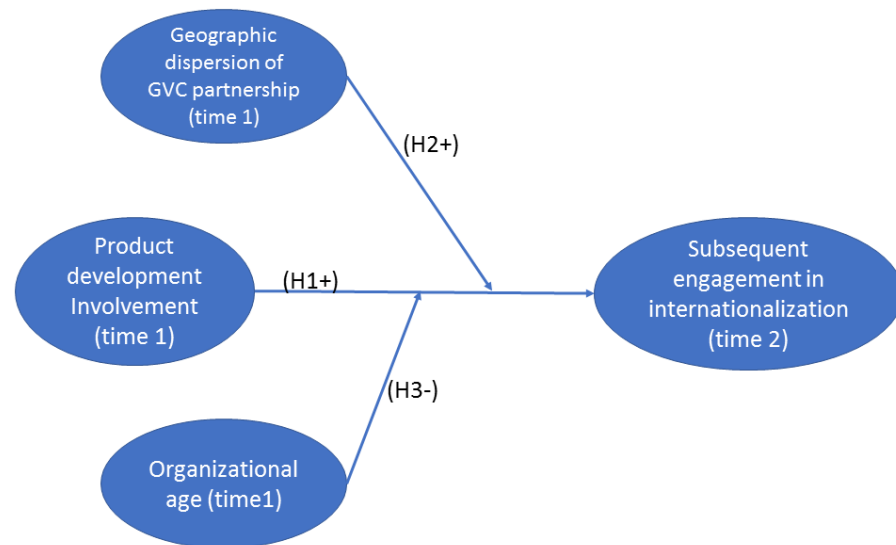
communication patterns become embedded (BarNir, Gallagher, & Auger, 2003). Older firms have also developed dense networks of exchange partners, invested in stable technologies, and gained other resources (Desai, 2008) that are difficult and costly to adjust (Balasubramanian & Lee, 2008). All of these increases organizational rigidity and reduce the likelihood of adaptation and change relative to a firm's environment (Hannan & Freeman, 1984, Miller & Chen, 1994).

This inertia, I argue, may moderate the learning of EE firms from product development involvement in a GVC partnership, in the sense that older firms are less likely to accommodate external knowledge gained from a GVC partnership into the structure and core functions of their organizations. Older firms may be slow to respond to stimuli from resource providing partners and also to implement change even when decisions are made to do so (Desai, 2008) due to significantly established routines, managerial mindsets, and their dominant logic (BarNir, Gallagher, & Auger, 2003), which are less flexible and encourage the reproduction of past actions. As a consequence, they would be slow to update their areas of concentration and less likely to incorporate the knowledge and advanced technology of other firms into their operations (Sørensen & Stuart, 2000), thus suffering from non-learning, blindness, and conservatism, which cause poorer performance when compared with younger firms (Durand & Coeurderoy, 2001). In this sense, firm age can be considered a disadvantage or liability. Collectively, the characteristics of older organizations may hamper the learning benefits of product development involvement on their future DOI more than for younger organizations.

***Hypothesis 3: The age of EE firm negatively moderates the relationship between EE firm's product development involvement and its subsequent degree of internationalization such that the relationship is weaker when the firm age is high as***

*opposed to low.*

**Figure 8: The proposed model for study 3**



### **5.3 Empirical Design and Methods**

#### **5.3.1 Sampling frame and characteristics**

The data for this study was obtained from manufacturing firms in Thailand. Thailand is known as a location that is highly engaged in GVCs. Many Thai manufacturers are dependent on GVC linkages as suppliers of global customers, and thus Thai manufacturing firms offer an ideal empirical setting for studying the role of embeddedness within GVCs and its relationship to future internationalization activities. Moreover, learning from GVC linkages is an especially vital platform for the catch-up and upgrading of Thai firms and the Thai economy (Pietrobelli & Saliola, 2008, Saliola & Zanfei, 2009).

As there is no specific list of Thai GVC firms available, I utilized Thai supplier list provided on the website of the Department of International Trade Promotion (DITP), Thai Government. These firms are regarded by DITP as suppliers to foreign

firms. Using a questionnaire method, this study drew a random sample of 1000 Thai manufacturing firms from an initial sampling frame of approximately 11,600 firms, which were listed on the website of DITP. Out of this initial sample, 895 firms had valid contact details. The current study utilized a two-step procedure to improve the survey response rate, by first conducting telephone pre-screening to identify potential respondents from each firm, and then making interview times. I strictly recruited respondents who were either the top manager or a senior manager who reports directly to the top manager. The data were mainly collected through face-to-face or phone interviews. If I were unable to make an appointment for an interview, then the questionnaire was delivered to potential respondents by post or email. The language of the survey was Thai. To ensure comparability between the English and Thai versions of the survey instrument, a back-translate procedure was employed. Questionnaire items were pretested and validated by one business executive and three academics prior to the administration of the survey.

After two to three follow-up reminders, a total of 351 responses were received. Of those, 60 responses were excluded due to 1) too many missing values, 2) missing key variables, and/or 3) firm age < 6 years<sup>6</sup>. After excluding the unusable questionnaires, 291 responses were identified as useable, yielding a 32.51% response rate. This study has a comparable response rate with a recent study related to resource dependence theory (Xia, Jiang, Li, & Aulakh, 2014) and a study using GVC partnerships as a research context (Khan, Shenkar, & Lew, 2015). The sample distributions on key characteristics were mostly consistent with the population (see Table 16), providing confidence in the representativeness of this sample.

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<sup>6</sup> The survey asked retrospective information from between 2011 and 2016.

To avoid common methods variance (CMV), the measures of the key variables (e.g., customer scope and product development involvement) were placed at different positions in the survey (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Furthermore, potential biases associated with using survey methods were examined. Following these extrapolation methods, the non-response bias was assessed by comparing earlier respondents to those who responded later (248 versus 43 responses) using a t-test on several key variables, such as product development involvement, geographic dispersion of GVC partnership, firm age, foreign sales, firm size, ownership, and international experience. No significant differences of mean comparison were detected.

**Table 16: Sample firms and key distributional characteristics**

<b>Firm Age (Years, %)</b>						<b>Export (%)</b>		
	<5	5-9	10-19	20-29	>30	< 20	20-49	> 50
MIC 2012 (N=424,196)	18.4	26.2	34.8	12.8	7.8	25.90	26.3	47.8
This sample (N=291)	n/a	8.2	54.3	20.6	16.8	13.7	49.8	36.4

	<b>No. of Employee es (Size)</b>	<b>Thai Firms (%)</b>	<b>Joint Ventures (%)</b>	<b>Foreign Firms (%)</b>	<b>Total (%)</b>
TFP2015 (N=903)		28.60	1.40	0.80	30.80
This sample (year 2015, N=120)	< 50	38.14	3.09	0.00	41.23
TFP2015 (N=960)		27.70	3.30	1.70	32.70
This sample (year 2015, N=73)	51-200	15.12	5.84	4.12	25.08
TFP2015 (N=1069)		26.30	6.00	4.20	36.50
This sample (year 2015, N=98)	> 200	8.93	11.34	13.40	33.67
Total TFP2015 (N=1069)		82.60	10.60	6.70	100
Total sample (year 2015, N=291)	All	62.2	20.3	17.50	100

**Note:** Population information were obtained from (i) the 2012 Manufacturing Industrial Census (MIC) published by National Statistical Office, Ministry of Digital Economy and Society, Royal Thai Government and (ii) Total Factor Productivity (TFP) Report 2015 published by Office of Industrial Economics, Ministry of Industry, Royal Thai Government.

### 5.3.2 Measures and operationalization

The measurement items in this study were adapted from established scales in the literature. Some variables were measured using actual values (e.g., firm age, size, and years of international experience).

**Dependent variable - *Degree of internationalization (DOI)*:** Sullivan's (1994) degree of internationalization was adopted to capture the engagement of EE firms in internationalization activities. As this study is interested in subsequent engagement in internationalization, this study asked respondents from each firm to refer to the time period 2013 to 2014 (time 2) and to indicate "Foreign sales as a percentage of total sales". It is important to note that in calculating DOI, foreign sales usually comprise of export sales and subsidiary sales. For these EE firms, their foreign sales are mainly from direct exports to foreign partners in GVCs as they do not have foreign subsidiary. DOI of these firms thus can also be argued to reflect their GVC linkages. Other information relevant to the time period 2011 to 2014 was also obtained to triangulate the consistency of the focal variables with other relevant information. The DOI of the firm in this sample has mean value and standard deviations at 44.35 and 20.79 respectively.

**Explanatory variables - *Product development involvement (INVOLVE)*:** This construct reflects the extent to which EE firms get involved in relational embeddedness, such as value-creation roles or innovative activities in design and product development (Alcacer & Oxley, 2014). Built upon Saliola & Zanfei's (2009) notion of the knowledge intensive value chain relationship characterized by the involvement of suppliers in product R&D activities, this study asked the respondents to refer to the time period between 2011 and 2012 (time 1) and rate the extent to which they agree with the following statements. "Our company initiated new designs of products to major customers" and "Our company involved in product development with major customers" (using a 7-point scale from 1 = strongly disagree to 7 = strongly agree). Together the

responses indicate the degree of relational embeddedness EE firms have in the GVC partnership. The alpha value for the 2-item measure = 0.97. Indicators 1 and 2 have mean values 4.35 and 4.49 respectively, and the standard deviations are 1.82 and 1.65 accordingly.

*Geographic dispersion/diversity of GVC partnership (SCOPE):* Adapted from Tallman & Li's (1996) country count and Zhang, Li, Li, & Zhou's (2010) measure of the diversity of countries of origin, this study operationalized this construct using a count of the countries of origin of major customers to capture the geographical diversity of partnership portfolio. The respondents were asked to refer to the time period 2011 to 2012 (time 1) and to identify the countries of origin of their major (top five) customers. It is worth noting that geographical diversity of partnership portfolio and the degree of internationalization (e.g., foreign sales to total sales) are related but different concepts. For example, a firm that has 50% foreign sales from one foreign market is obviously different to a firm with 50% foreign sales that are spread over ten countries (Verbeke & Brugman, 2009). The geographic dispersion of GVC partners in this sample has a mean value and a standard deviation at 3.26 and 1.54 respectively.

*Firm age:* this variable was measured as the number of years since the founding of the firm (BarNir, Gallagher, & Auger, 2003). This study asked for the number of years of operation until year 2016 and then calculated the age of the firms during the time period 2011-2012 (that is, firm age in year 2016 minus five years). The age of the firms in the sample ranged from 6 to 96 years, with a mean of 19.00 and a standard deviation of 11.00.

*Control variables:* Some key variables highlighted in previous studies (e.g., Grant, Jammine, & Thomas, 1988, Nobeoka, Dyer, & Madhok, 2002, Tallman & Li, 1996) as affecting internationalization were included as control variables. This study controlled for supplier *size* (operationalized as the average number of employees in the

time period 2011 to 2012), *financial slack* (using the three-item measures of financial slack developed by Tan & Peng (2003)), *international experience* (the number of years serving international customers/markets up until the year 2011), and *ownership* (joint venture firms were coded 1, with wholly-owned by Thais as the baseline). These variables reflect a firm's resources that are conceptually related to both learning and utilizing external knowledge sources.

Last, as prior research has shown, industry factors can impact the variability of a firm's profitability (Grant, Jammine, & Thomas, 1988), and hence this study coded *industry dummy*<sup>7</sup> for *high-tech* (Qian & Li, 2003, Stuart, 2000) and *heavy industry* (Rumelt, 1982), with other industries as the baseline, and included these dummy variables in the model.

### 5.3.3 Methods of analysis

This study used regression diagnostics to assess whether the hypothesized relationships were satisfied. I transformed variables, namely, firm age (AGE), and firm size (SIZE), international experience (INTL) using a natural logarithm to obtain normal distribution. This study used an average value of the two-item measures of product development involvement (INVOLVE) to account for relational embeddedness. I calculated factor score weighted items and then created a composite variable from the three-weighted items of financial slack (SLACK) measure. This study used the standardized values of focal independent and moderator variables to create the interaction terms (i.e., Z\_SCOPE\* Z\_INVOLVE and Z\_AGE\* Z\_INVOLVE) to avoid multicollinearity. A moderating effect existed only if the interaction term contributed

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<sup>7</sup> For definition of high-tech industry please refer to Qian & Li (2003) and Stuart (2000) and for the definition of heavy industry please refer to Rumelt (1982). In this sample, chemicals and iron & steel industry are included as heavy industries while firms in automotive parts & motorcycles, machinery & industrial equipment, consumer electronics & electronics components, computer hardware & IT, medical equipment, and telecommunications are classified as high-tech industry.

significantly to the variance explained in the dependent variable. To avoid spurious conclusions, the multiple regression models also included control variables.

To evaluate the explanatory power of product development involvement (INVOLVE) relative to that of the other independent variables, I calculated incremental adjusted  $R^2$ s ( $\Delta$  adjusted  $R^2$ ) between the five models. Following Grant, Jammie, and Thomas (1988) and Nobeoka, Dyer, and Madhok (2002), the variables were entered in five steps, with only basic control variables first (Model A), the focal independent variables second (Model B), the interaction term Z\_SCOPE\* Z\_INVOLVE (Model C), the interaction term Z\_AGE\* Z\_INVOLVE (Model D), and both interaction terms at the end (Model E). The model specifications are as follows.

$$\text{Model A} \quad \text{DOI} = \beta_0 + \beta_1 \text{HITECH} + \beta_2 \text{HEAVY} + \beta_3 \text{OWN} + \beta_4 \text{SIZE} + \beta_5 \text{SLACK} + \beta_6 \text{INTL} + \varepsilon_i$$

$$\text{Model B} \quad \text{DOI} = \beta_7 + \beta_8 \text{HITECH} + \beta_9 \text{HEAVY} + \beta_{10} \text{OWN} + \beta_{11} \text{SIZE} + \beta_{12} \text{SLACK} + \beta_{13} \text{INTL} + \beta_{14} \text{INVOLVE} + \beta_{15} \text{SCOPE} + \beta_{16} \text{AGE} + \varepsilon_i$$

$$\text{Model C} \quad \text{DOI} = \beta_{17} + \beta_{18} \text{HITECH} + \beta_{19} \text{HEAVY} + \beta_{20} \text{OWN} + \beta_{21} \text{SIZE} + \beta_{22} \text{SLACK} + \beta_{23} \text{INTL} + \beta_{24} \text{INVOLVE} + \beta_{25} \text{SCOPE} + \beta_{26} \text{AGE} + \beta_{27} (\text{Z\_SCOPE}) * (\text{Z\_INVOLVE}) + \varepsilon_i$$

$$\text{Model D} \quad \text{DOI} = \beta_{28} + \beta_{29} \text{HITECH} + \beta_{30} \text{HEAVY} + \beta_{31} \text{OWN} + \beta_{32} \text{SIZE} + \beta_{33} \text{SLACK} + \beta_{34} \text{INTL} + \beta_{35} \text{INVOLVE} + \beta_{36} \text{SCOPE} + \beta_{37} \text{AGE} + \beta_{38} (\text{Z\_AGE}) * (\text{Z\_INVOLVE}) + \varepsilon_i$$

$$\text{Model E} \quad \text{DOI} = \beta_{39} + \beta_{40} \text{HITECH} + \beta_{41} \text{HEAVY} + \beta_{42} \text{OWN} + \beta_{43} \text{SIZE} + \beta_{44} \text{SLACK} + \beta_{45} \text{INTL} + \beta_{46} \text{INVOLVE} + \beta_{47} \text{SCOPE} + \beta_{48} \text{AGE} + \beta_{49} (\text{Z\_SCOPE}) * (\text{Z\_INVOLVE}) + \beta_{50} (\text{Z\_AGE}) * (\text{Z\_INVOLVE}) + \varepsilon_i$$

**Where** DOI = Degree of Internationalization at time 2; HITECH = High-tech industry; HEAVY = Heavy industry; OWN = Joint venture ownership; SIZE = Log of an average



number of employees in the time period 2011 to 2012; SLACK = Financial slack; INTL = Log of international experience; INVOLVE = Product development involvement at time 1; SCOPE = Geographic dispersion of GVC partnership at time 1; AGE = Log of firm age at time 1;  $\varepsilon_i$  = residuals

## **5.4 Results**

### **5.4.1 Descriptive statistics**

The samples were predominantly from six major industries: consumer electronics & electronics components (7.8%), machinery and industrial equipment (8.2%), automotive parts and motorcycles (9.93%), furniture and decor (12.33%), textiles and clothing (10.96%), gems and jewelry (26.37%), and other industries (24.4%).

As illustrated in Table 16, 8.2% of those suppliers were younger than twelve years of age; 54.3% were between 10 and 19 years of age, and 37.4% were older than 20 years of age. 41.23% of those suppliers had less than 50 employees; 25.08% were medium size (51-200 employees), and 33.67% were large firms (with more than 200 employees). Approximately 36.4% of those suppliers reported that foreign sales accounted for more than 50% of their total sales, while 13.7% reported that foreign sales accounted for less than 20% of their total sales.

Table 17 presents the means, standard deviations, and correlations among the focal variables and controls. The average for DOI for EE firms in this sample was 44.35%. On average, the EE firms sold to 3.26 different countries of origin. 28.52% of the sample were in high-tech industries and 5.50% were in heavy-industry, while 65.97% were from other industry types.

DOI is significantly correlated to product development involvement (INVOLVE), international experience, and financial slack with correlations ranging

from 0.20 to 0.33 at  $p < 0.01$ . INVOLVE is negatively correlated to heavy industry ( $r = -0.13$ ;  $p < 0.05$ ), high-tech industry, joint venture ownership, and firm size (correlations are -0.49, -0.36, and -0.39 respectively;  $p < 0.01$ ), and is positively associated with financial slack ( $r = 0.53$ ;  $p < 0.01$ ). SCOPE is negatively correlated to firm size ( $r = -0.12$ ;  $p < 0.05$ ), and joint venture ownership and INVOLVE (correlations are -0.26, and -0.14 respectively at  $p < 0.01$ ). AGE is positively related to SIZE and international experience ( $r = 0.22$  and  $r = 0.72$  respectively at  $p < 0.01$ ).

Joint venture ownership also had a negative correlation to financial slack ( $r = -0.33$ ;  $p < 0.01$ ), while it was positively correlated to high-tech and heavy industry (correlations were 0.56 and 0.19 respectively at  $p < 0.01$ ). EE firms in high-tech industries demonstrated a stronger positive correlation to joint venture ownership ( $r = 0.56$ ;  $p < 0.01$ ) and size ( $r = 0.47$ ;  $p < 0.01$ ) than those in heavy industries, as well as presenting a stronger negative correlation to financial slack and INVOLVE ( $r = -0.38$  and  $r = -0.49$  respectively at  $p < 0.01$ ) than those in heavy industries. Overall, the correlation results justified the inclusion of control variables.

**Table 17: Correlation Matrix and Descriptive Statistics of Measures**

	1	2	3	4	5	6	7	8	9	10
1 Degree of internationalization	1									
2 High-tech industry	-0.23**	1								
3 Heavy industry	-0.08	-0.15**	1							
4 Ownership	-0.06	0.56**	0.19**	1						
5 Firm Size (log)	-0.01	0.47**	0.18**	0.57**	1					
6 International experience (log)	0.20**	0.06	0.05	0.08	0.21**	1				
7 Financial slack	0.28**	-0.38**	-0.03	-0.33**	-0.22**	0.04	1			
8 Product development involvement	0.33**	-0.49**	-0.13*	-0.36**	-0.39**	0.00	0.53**	1		
9 Geographic dispersion of GVC partnership	-0.10	-0.06	-0.10	-0.26**	-0.12*	-0.05	0.00	-0.14*	1	
10 Firm age (log)	0.10	0.07	0.00	-0.02	0.22**	0.72**	0.04	-0.08	0.03	1
Mean	44.35	0.29	0.05	0.38	4.40	2.23	3.88	4.42	3.26	2.36
Std. Deviation	20.79	0.45	0.23	0.49	1.50	0.80	1.41	1.71	1.54	0.80
Skewness	0.55	0.96	3.93	0.51	0.23	-0.68	0.18	-0.33	-0.17	-0.55
Kurtosis	0.76	-1.09	13.50	-1.76	0.08	0.96	-0.62	-0.78	-1.47	0.70

N= 291; \*\* Correlation is significant at the 0.01 level (2-tailed); \* Correlation is significant at the 0.05 level (2-tailed).

### 5.4.2 Hypothesis testing

Multicollinearity is not a significant problem in this study for two reasons. First, all individual variance inflation factors (VIFs) ranged from 1.05 to 2.16 in Model E, indicating low collinearity. Second, the correlation matrix in Table 17 indicates that the focal variables are not highly correlated. INVOLVE (time 1) has a low correlation with DOI (time 2) and has a low negative correlation with SCOPE (time 1). SCOPE (time 1) has an insignificant correlation with DOI and AGE. Age also was not significantly correlated to DOI, INVOLVE, and/or SCOPE.

In Table 18, Model A shows that the effects of all control variables on the DOI of EE firms at time 2 were significant, except for SIZE. Both HITECH and HEAVY are always negatively related to DOI across all models ( $B = -0.31$ ,  $SE = 3.39$ ,  $p = 0.000$  and  $B = -0.17$ ,  $SE = 5.37$ ,  $p = 0.004$  respectively in Model A). International experience (INTL) always significantly and positively relates to DOI ( $B = 0.18$ ,  $SE = 1.43$ ,  $p = 0.001$  in Model A). These results indicate that the firms in high-tech and heavy industries are likely to have a low level of subsequent DOI, while the longer the time of serving international market increases the subsequent DOI. OWN was only significant in Model A, while SIZE did not appear to have a significant relationship with DOI, except in Model D ( $B = 0.14$ ,  $SE = 0.98$ ,  $p = 0.049$ ). These results suggest that OWN and SIZE do not have a major impact on the future DOI of EE firms. SLACK showed a significant positive association with DOI in Models B and D, but was not significant in Models C and E, implying that SLACK becomes less significant with the presence of the product term  $Z\_SCOPE * Z\_INVOLVE$ .

Model A, given it did not include any learning source variables (i.e., INVOLVE) or learning contingencies (i.e., SCOPE and AGE), was not effective in predicting DOI at time 2 as demonstrated by an  $R^2$  of only 17.0% ( $\text{Adj. } R^2 = 0.152$ ,  $p < 0.001$ ). When

adding product development involvement (INVOLVE), geographic dispersion of GVC partnership (SCOPE), and firm age (AGE) all at time 1 in Model B, the explanatory power of the model improved significantly and accounted for 20.2% (Adj.  $R^2 = 0.176$ ,  $p < 0.001$ ) of the variance of DOI (time 2). In particular, INVOLVE at time 1 had a significantly positive relationship with the DOI at time 2 ( $p = 0.003$ ). Next, the interaction terms were added in Models C and D respectively; that is,  $Z\_SCOPE * Z\_INVOLVE$  was added in Model C while  $Z\_AGE * Z\_INVOLVE$  was added in Model D. The  $R^2$  jumps to 24.3% in Model C (Adj.  $R^2 = 0.216$ ,  $p < 0.001$ ) but it only slightly increases to 20.7% in Model D (Adj.  $R^2 = 0.207$ ,  $p < 0.001$ ). When the interaction terms were both added in Model E, the explanatory power increased to 24.8% (Adj.  $R^2 = 0.218$ ,  $p < 0.001$ ).

As can be seen in Model B, INVOLVE, as predicted, had a positive and significant association with the DOI at time 2 ( $B = 0.22$ ,  $SE = 0.89$ ,  $p = 0.003$ ), even after controlling for other factors that may influence subsequent DOI. **This result offers empirical support for Hypothesis 1.** This result provides support for the value-creation role through product development involvement being the linkage that enables learning and strengthens the subsequent engagement by EE firms in internationalization activities. However, standardised regression coefficients for SCOPE and AGE were not statistically significant, suggesting that they do not have a direct relationship with future DOI. This is consistent across all models.

**Table 18: Regression results of Subsequent Degree of internationalization (DOI)**

	Model A		Model B		Model C		Model D		Model E	
	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>p</i>	<i>B(SE)</i>	<i>P</i>	<i>B(SE)</i>	<i>P</i>	<i>B(SE)</i>	<i>P</i>
<b>Control – industry</b>										
HITECH	-0.31(3.39)	0.000	-0.24(3.51)	0.002	-0.20(3.46)	0.010	-0.24(3.51)	0.002	-0.20(3.46)	0.010
HEAVY	-0.17(5.37)	0.004	-0.14(5.39)	0.020	-0.14(5.26)	0.017	-0.13(5.39)	0.024	-0.14(5.26)	0.021
<b>Controls</b>										
OWN	0.15(3.19)	0.046	0.12(3.30)	0.126	0.10(5.26)	0.171	0.12(3.30)	0.137	0.10(3.22)	0.183
SIZE (log)	0.10(0.97)	0.173	0.14(0.98)	0.054	0.13(0.96)	0.071	0.14(0.98)	0.049	0.13(0.95)	0.065
INTL(log)	0.18(1.43)	0.000	0.19(1.95)	0.014	0.18(1.90)	0.014	0.20(1.96)	0.010	0.19(1.91)	0.010
SLACK	0.22(0.88)	0.000	0.13(0.95)	0.040	0.09(0.94)	0.149	0.13(0.95)	0.043	0.09(0.94)	0.154
<b>Independent variable</b>										
INVOLVE			0.22(0.89)	0.003	0.11(0.93)	0.162	0.21(0.89)	0.004	0.10(0.93)	0.173
SCOPE			-0.04(0.78)	0.535	0.01(0.78)	0.850	-0.03(0.78)	0.623	0.02(0.79)	0.771
AGE (log)			-0.03(1.99)	0.748	-0.01(1.94)	0.927	-0.04(2.01)	0.583	-0.02(1.97)	0.761
<b>Interaction terms</b>										
Z_SCOPE * Z_INVOLVE					0.26(1.43)	0.000			0.26(1.43)	0.000
Z_AGE * Z_INVOLVE							0.08(1.12)	0.157	0.07(1.09)	0.197
<b>Model summary</b>										
<i>F</i> value	9.686	0.000	7.886	0.000	9.009	0.000	7.324	0.000	8.362	0.000
<i>R</i> <sup>2</sup>	0.170		0.202		0.243		0.207		0.248	
Adjusted <i>R</i> <sup>2</sup>	0.152		0.176		0.216		0.179		0.218	
$\Delta$ Adjusted <i>R</i> <sup>2</sup>			0.032		0.042		0.006		0.046	
Incremental <i>F</i> value			3.468	0.012	7.623	0.000	2.001	0.157	8.588	0.000
			(Model A to B)		(Model B to C)		(Model B to D)		(Model B to E)	

Note: Dependent variable: DOI; N=291; The beta values ( $\beta$ s) in the table are standardized coefficients.

To test the moderating effect of SCOPE (time 1) on the relationship between INVOLVE (time 1) and DOI (time 2), I introduced the interaction term ( $Z\_SCOPE * Z\_INVOLVE$ ) in Model C. I found that the interaction term exhibited a positive and significant effect on subsequent DOI ( $B = 0.26, SE = 1.43, p = 0.000$ ). To further investigate the moderating effect of SCOPE (time 1), I estimated the relationship between INVOLVE (time 1) and DOI (time 2) using bias-corrected bootstrapped 95% confidence intervals (5,000 bootstrap samples) at  $\pm 1$  standard deviation of SCOPE. As shown in Table 19, INVOLVE is positively related to subsequent DOI for EE firms with a high degree of SCOPE as 95% confidence intervals were positive and did not contain zero (i.e., at mean + 1 SD; conditional effect:  $b = 4.60, SE = 1.00, p < 0.001$ , 95% CI [2.62, 6.56]), but not for those with a low degree of SCOPE (i.e., at mean - 1 SD; conditional effect:  $b = -2.00, SE = 1.46$ , *non-significant*, 95% CI [-4.86, 0.87]). This suggests that the INVOLVE-DOI relationship varies depending on SCOPE. The conditional effect of INVOLVE on DOI was significant and positive at a high value of SCOPE, **lending support for Hypothesis 2**. It therefore suggests that the association between INVOLVE (time 1) and DOI (time 2) would be greater if EE firms have increased SCOPE.

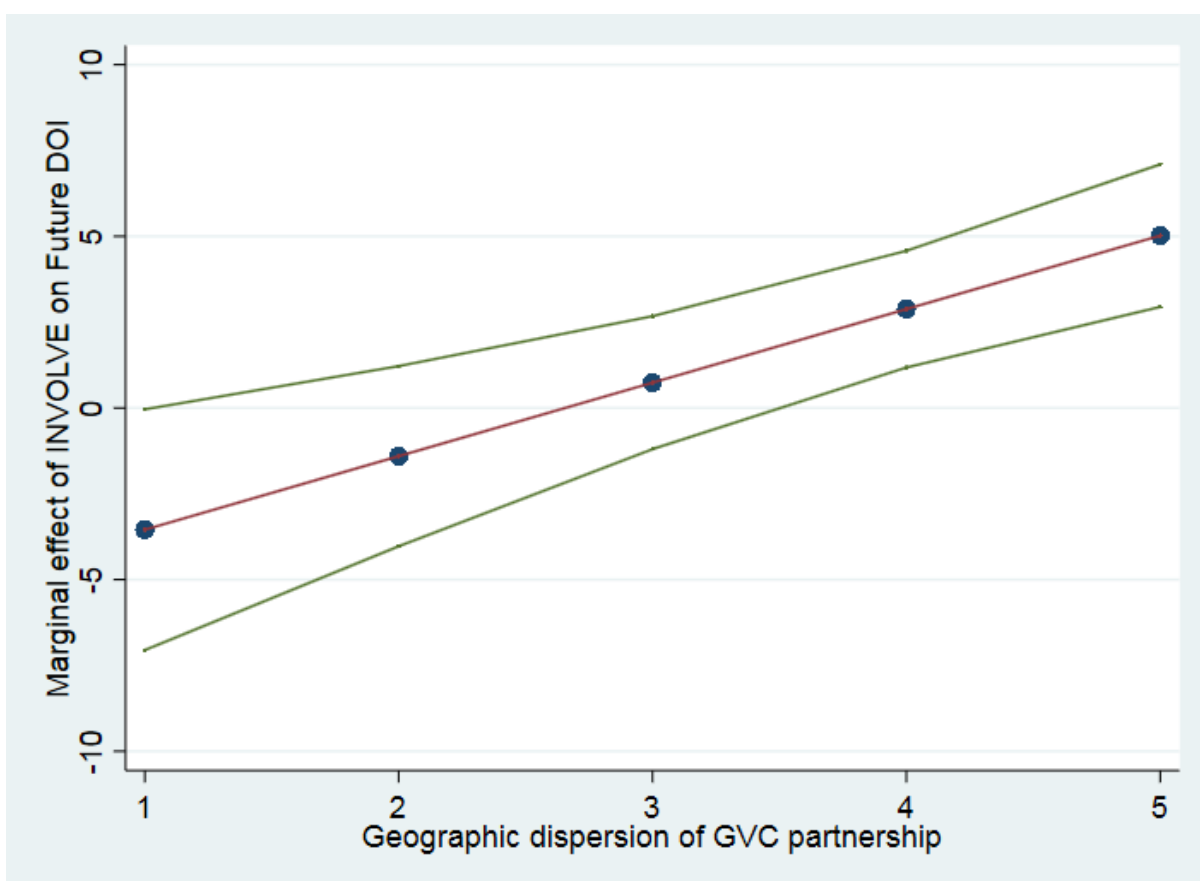
I further explored the nature of the moderating effect of INVOLVE (time 1) on subsequent DOI (time 2) at different values of SCOPE (time 1) by calculating marginal effect. The marginal effect is significantly stronger for values of SCOPE above 3.45, and 45.02 % of the sample observations are in the range where the marginal effect is significant (see Figure 9).

**Table 19: Estimates and bias-corrected bootstrapped 95% confidence intervals (5000 bootstrap samples) for the moderating effect at  $\pm 1$  standard deviation of moderator**

Moderator	Model D (Moderating effect) INVOLVE on Subsequent DOI		
	Level of estimate	<i>B (SE)<sup>a</sup></i>	95% CI
SCOPE	-1 SD	-2.00 (1.46)	[-4.86, 0.87]
	+1 SD	4.60 (1.00)	[2.62, 6.56]

Note: CI = confident interval. <sup>a</sup> Bootstrapped estimates for the standard error (*SE*) are presented.

**Figure 9: The marginal effect of product development involvement on subsequent DOI at the values of scope of the GVC partner portfolio**





On the other hand, the interaction term ( $Z\_AGE * Z\_INVOLVE$ ) in Table 18 Model D, was not significantly associated with the DOI of EE firms at time 2 ( $B = 0.08$ ,  $SE = 1.12$ ,  $p = 0.157$ ). **Hypothesis 3 therefore was not supported.** The results echo the inconclusive findings and continued debate among scholars regarding the effect of organizational inertia on learning.

Further, the significance of cross product between  $Z\_SCOPE * Z\_INVOLVE$  in Model E ( $B = 0.26$ ,  $SE = 1.43$ ,  $p = 0.000$ ) is also consistent with the result in Model C.  $Z\_AGE * Z\_INVOLVE$  also remains consistently insignificant ( $B = 0.07$ ,  $SE = 1.09$ ,  $p = 0.197$ ) in Model E. Thus, the regression results across the five models clearly indicate that, first, INVOLVE has a positive and significant relationship with the future DOI of EE firms, and, second, SCOPE significantly and positively moderates the relationship, whereas age does not, between INVOLVE and future DOI.

## 5.5 Discussion and Conclusion

Building on the notion of embeddedness (Gulati & Sych, 2007), this study has distinguished transactional embeddedness in arm's length relationships from relational embeddedness in GVC partnerships, and have examined the association of relational embeddedness and the subsequent degree of internationalization (DOI) by EE firms, by taking into account the role of learning contingencies, which are the learning source's geographic dispersion and firm age, as organizational inertia. The current study explored this issue by empirically testing the following research questions:

- (i) what is the extent to which product development involvement (an indication that signifies high relational embeddedness) affects subsequent DOI of EE firms?;
- (ii) to what extent is the association between product development involvement (INVOLVE) and the subsequent DOI by EE firms allowed to vary due to the

geographic dispersion of GVC partnerships (an indication of learning source diversity)?; and,

- (iii) what is the extent to which INVOLVE - DOI relationship might vary by firm age (an indication of organizational inertia)?

Overall, the results indicate that EE firms involved in value-creation roles (e.g., product development) have a significantly higher subsequent DOI compared with those with less involvement in a value-creation role. While this study found the age of EE firms does not significantly attenuate the relationship between product development involvement (INVOLVE) and subsequent DOI, the geographic diversity of the GVC partnership has a positive moderating effect on the INVOLVE – future DOI relationship. This means the diverse scope of the GVC partnership, by reducing the dependence of the focal EE firm in relation to a particular foreign partner in terms of revenue generation and knowledge sources, allows the firm to stabilize and increase the flow of critical knowledge from diverse learning sources, and thereby strengthens the internationalization activities of the firm through establishing multiple resource providing partners.

This study has argued that product development involvement, as an important form of embeddedness in GVCs, has implications on subsequent and future engagement in internationalization by EE firms. The study shifts the focus from the mutual dependence reflected in the magnitude of exchange in arm's-length relationships to the mutual dependence that stems from product development involvement in GVC partnerships. This research, hence, provides a new exploration of RDT for the internationalization of EE firms, which could be a potential area for further research.

### **5.5.1 Theoretical contributions and implications**

This study makes three key contributions to the literature. First, it develops a framework integrating the role of embeddedness which underlies resource dependence theory (RDT) in predicting subsequent DOI by EE firms. This study, thus, contributes to learning by EE firms by showing embeddedness logic stemming from mutual dependence in GVC linkages allows for depth in economic interactions, and subsequently in the cumulative capabilities of EE firms. It is also important that RDT puts forth an explanation for the subsequent engagement in internationalization activities by EE firms.

Second, this study is also novel in that, to the best of my knowledge, this study is the first to integrate the role of product development involvement and multinationality (e.g., geographic dispersion of the partnership portfolio) into internationalization literature regarding EE firms. Integrating these two aspects of the GVC partnership advances current knowledge about the way in which EE firms configure linkages that might influence their learning in GVCs through the value-creation roles they play in the exchange relationship, and through managing a portfolio of GVCs partners/customers. Further, based on a combination of embeddedness and the power/autonomy logic underlying RDT (Drees & Heugens, 2013, Gulati & Sytch, 2007), this study advances understanding on how EE firms combine both the value-creation role and the geographic diversity of the GVC partnership to stabilize the flow of critical resources from multiple resource providing partners, while at the same time developing the ability to strengthen their own internationalization activities. In investigating the role of geographic dispersion within GVC partnerships, this study also responded to Nobeoka et al.'s (2002) recommendation to examine the importance of the geographical diversity of customers.

Third, IB scholars have debated the importance of linkages for EE firms but have not clearly identified the linkage characteristics that strengthen the competitive position of an EE firm. This study has added to the Linkage-Leverage-Learning framework (Mathews, 2006) by showing that the linkage characterized by relational embeddedness (e.g., involvement in product development) is important for EE firms to be able to leverage such linkages for the further development of additional linkages in the global economy (that is, a repeated application of linkage and leverage). Such linkages between exchange partners can foster the internationalization activities of EE firms with existing and new customers in the global economy, which supports the notion of the recursive process as outlined in the LLL framework.

### **5.5.2 Managerial implications for emerging economy firms**

The importance of GVCs as a platform of learning for EE firms is widely accepted (Schmitz, 2006). However, the real challenge is how EE firms can ensure the learning benefits from GVC partnerships to increase their engagement in the global economy. So far, we have limited understanding and minimal practical solutions. Based on the two dimensions of the GVC partnership (i.e., the value-creation role and geographic diversity in GVC partnerships), this study has illustrated how embeddedness and power/autonomy contributes to the learning and subsequent internationalization of EE firms, and offer some implications for management as follows.

The value-creation role (e.g. product development involvement) helps EE firms foster relational embeddedness with partnerships in GVC linkages. The increased relational embeddedness tends to create coordination, trust, and information exchange, and thereby benefits future engagement by EE firms in the global economy. For EE firms aiming to upgrade their competitive advantages at an international level, engaging in GVC linkages as a platform for nurturing their capabilities is essential. Nevertheless, it is clear from the results that linkages characterized by production development

involvement are more conducive to learning and future internationalization activities. For larger EE firms, interactions in product design and development with GVC partners can be a channel for intensive knowledge flow which they can utilize to move up to a higher competitive position in the value chains, ultimately enabling their increased international presence and activities. These findings and implications reinforce the notion that the product development and design is a more substantial knowledge intensive linkage than pure-manufacturing linkages (Alcacer & Oxley, 2014, Saliola & Zanfei, 2009).

The results also suggest that EE firms can strengthen their internationalization activities by participating in value-creation roles while also being engaged with multiple partners in dispersed geographical locations. The bargaining power stemming from the diverse scope of GVC partnership helps increase the relative power to GVC partners in terms of revenue and knowledge sources, and thus allows EE firms to stabilize and increase the flow of critical knowledge from multiple resource providing partners, which can then be leveraged beyond the key customer or focal chain. Therefore, having a diverse geographical scope of GVC partners can strengthen the relationship between product development involvement and DOI.

### **5.5.3 Limitations and recommendations**

This study has several limitations that may provide avenues for future research. First, this study has limited the theorizing to the RDT perspective because it has been understudied in EE firm internationalization literature. However, there may be other theoretical approaches, in addition to RDT, that provide possible explanations for learning by EE firms and their subsequent/future engagements in internationalization. Although this study utilized some techniques to avoid common methods variance and used actual data when possible, the design of this study was limited due to the survey questions asking for information that is retrospective (i.e., asking managers to refer to

periods during the years 2011-2012 and 2013-2014 when answering the survey questions). While this technique allows the respondents to recall and recognize the development of the firms, they may not be able to clearly delineate what happened during those specific time periods. Future research using secondary data sources would allow cross validation with the self-reported data by the respondents. Also, as one may argue that product development involvement should not have the same effect for internationalization to markets at different levels of market sophistication, future research could consider controlling for where the subsequent internationalization is taking place. This study did not conduct the surveys in dyad, and future research could utilize data from both teaching and learning firms. Further, relational embeddedness can be operationalized in different ways other than the level of product development involvement (e.g., a number of direct interactions with up- and down-stream partners in other value-creating areas).

This study has enriched discussion on the relationship between the RDT perspective and learning by EE firms as a predictor of the subsequent DOI of EE firms. I hope that it will provide a new perspective for future research focusing on learner firms from emerging economies within the GVC setting. It is possible for future research to further investigate the drawbacks or non-linear moderating effects of increasing geographic diversity within GVC partnerships in conjunction with product development involvement and other dimensions of internationalization performance. Further investigating the embeddedness which emerges from other ways in which EE firms interact with GVC partners could potentially further advance our understanding of learning in GVC linkages. In addition, EE firms may develop subsequent international linkages in different ways (See Hult, Ketchen, Griffith, Chabowski, Hamman, Dykes, Pollitte, & Cavusgil, 2008, Sullivan, 1994) to those considered in this study. Future

research addressing subsequent international linkages using different theoretical constructs could also be beneficial.

## CHAPTER 6: CONCLUDING REMARKS

### 6.1 GVCs in IB Research Landscape

IB research in the twenty-first century has increasingly turned to GVCs, in which MNEs orchestrate and govern, as a unit of analysis. Past research has highlighted GVCs as learning resources for technologically-laggard firms in emerging economies, as evidenced by an increasing number of studies in leading management journals on the transfer and learning of knowledge through various types of GVC linkages (as already discussed in Chapter 2) (e.g., Alcacer & Oxley, 2014, Buckley & Strange, 2015, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012, Perez-Aleman, 2011). However, while prior works provide valuable insights into the complexity of learning by EE firms in GVC linkages from the network perspective (McDermott & Corredoira, 2010) and relational perspective (Kano, 2017, Khan, Shenkar, & Lew, 2015), there is opportunity for an integrated explanation that, (i) considers knowledge transfer benefits of GVCs from embeddedness and legitimacy perspective (see Study 1), typically overlooked by scholars, (ii) takes into account the knowledge characteristics transmitted in GVCs requiring different learning pathways for technologically-laggard EE firms (see Study 2), and (iii) unpacks the ways in which EE firms configure linkages with GVCs through geographic dispersion of partner portfolio and value-creation roles (see Study 3). Therefore, this thesis has produced a more complete understanding of the learning by EE firms from the global linkages such those in GVCs setting.

As illustrated in the three separate studies in Chapters 3, 4, and 5 respectively, this thesis extends the knowledge about learning by EE firms by:

- (i) shedding light on how the legitimacy resource gained from network embeddedness allows EE firms to access the learning resources available in GVC linkages;



- (ii) clarifying conditions that influence the utilization of different learning pathways and the effectiveness of those pathways; and
- (iii) highlighting the importance of relational embeddedness in GVC linkages and how EE firms combine embeddedness logic and power/autonomous logic of resource dependence theory (RDT) to sustain resource exchange and strengthen their GVC linkages.

I believe that the issues investigated in this thesis are of high importance, not least because they help address the puzzle over the variations in the learning outcomes of EE firms from GVC participation, but also because they reveal endogenous processes within EE firms, which we currently know little about. The positioning of this thesis treats GVCs as external knowledge sources with which EE firms strategically link to gain competitive advantages. This positioning reflects the global strategy undertaken by emerging multinationals to learn and upgrade their capabilities (Hotho, Lyles, & Easterby-Smith, 2015, Luo & Tung, 2018, Madhok & Keyhani, 2012, Mathews, 2017). However, this study considers, at least for the time being, the connections between global linkages and EE firms that position themselves as producers supplying for foreign buyers in GVCs settings (Alcacer & Oxley, 2014, Kumaraswamy, Mudambi, Saranga, & Tripathy, 2012), rather than emerging multinationals. EE firms' learning and evolution trajectory may not follow the existing theories of emerging multinationals, and thus serve as a potential research stream that could add to theoretical development.

There are several important issues that this thesis has slightly touched upon that are worth deeper investigation (e.g., the performance outcomes of GVC participation and value appropriation in GVCs). Researchers planning to extend the current research endeavor to understand learning by EE firms in GVC settings could use other theoretical perspectives and advanced techniques (e.g., social network analysis, multi-

level analysis etc.) for greater insights (See Argote, 2015, Buckley & Prashantham, 2016, Connelly, Ketchen, & Hult, 2013, Luo & Tung, 2018). Further, combining two or more theories in investigating EE firms' learning could generate deeper debate (e.g., any combination of institutional theory, resource dependence theory, and social network analysis). Rigorous empirical research design that enables new learning theories to emerge is also encouraged (Hotho, Lyles, & Easterby-Smith, 2015). More details on the directions for future research mentioned here are discussed in the later sections of this chapter.

## **6.2 Overall Contributions to Knowledge and Theory of EE Firms**

The three studies included in this thesis extend theoretical development on learning by EE firms. The first two studies deal with the endogenous process within EE firms, while the focus of the last study is on the linkage characteristics EE firms configure in GVCs. They contribute to the literature on global linkages and learning by EE firms in particular, but also have potential generalizability across firms in general regardless of their origins when explaining a firm's moving-up technology frontier.

Study 1 offers a complementary perspective of how learning by EE firms occurs in GVCs, and can extend our understanding of knowledge transfer benefits in networked global business systems. This study affirms that network embeddedness with GVC partners is important for knowledge transfer benefits, as changing and conforming to GVC partners helps EE firms gain legitimacy resource (Dacin, Oliver, & Roy, 2007, Oliver, 1991, Oliver, 1997) and thereby access to the knowledge resources of other chain members. This study extends the explanation as to why participating in global linkages does not automatically provide knowledge transfer benefits, but rather, network embeddedness enables the completed linkages between EE firms and global linkages. Thus, this study adds to the global linkage benefits topic within the IB literature.

Study 2 extends the parallel learning pathways of the absorptive capacity (ACAP) model (Todorova & Durisin, 2007) by discussing the knowledge characteristics transmitted in GVCs as contingencies for the utilization and relative effectiveness of assimilation- and transformation-based ACAP. This study highlights that EE firms vacillate between these parallel processes depending on the specificity and depth of knowledge. By contrasting the two parallel processes (transformation and assimilation), this study highlights how EE firms can achieve learning through a match/fit between knowledge characteristics and the information-processing process employed by their organization (Subramaniam & Venkatraman, 2001). Transformation is a crucial internal process, especially when the external knowledge acquired is incongruent with their existing knowledge stock, which enables learning by EE firms. This study, thereby, adds to our understanding of how EE firms interpret and exploit the distant and complex knowledge possessed by advanced foreign firms in GVCs.

Study 3 provides an integrated understanding about the ways in which EE firms configure the geographic diversity of GVC partnerships and play value-creation roles in GVCs to help them sustain resource exchanges with partners and, consequently, contribute further to their future internationalization activities. Based on the embeddedness logic underlying the mutual dependence logic of RDT (Gulati & Sytch, 2007), this study adds to the recursive process outlined in the Linkage-Leverage-Learning framework (Mathews, 2017, Mathews, 2006) by illustrating that linkages characterized by relational embeddedness (e.g., product development involvement) contribute to the future internationalization of EE firms. Further, EE firms also combine embeddedness and power/autonomous logic of RDT (Casciaro & Piskorski, 2005, Drees & Heugens, 2013) in stabilizing and increasing revenue and learning sources, and thereby strengthen their engagement in internationalization activities. Power and autonomy are important dimensions in GVC linkages, and, to my best knowledge,

internationalization literature has not examined how addressing disadvantages in terms of power and/or autonomous disadvantages in relation to an EE firm's foreign partners plays a role in their subsequent internationalization. This study explores subsequent internationalization using a combination of power/ autonomous and embeddedness logic underlying RDT.

Although this thesis has made original and substantial contributions to the fields of strategy and IB, there are some limitations. First, the current research design is country specific, utilizing a single national context drawing from a large sample size to contextualize theory. The findings may be limited to generate/advance theoretical insights and thus have limited implications (Hotho, Lyles, & Easterby-Smith, 2015). Second, this thesis has borrowed existing theories to systematically explain learning by EE firms in GVCs; however, these theories are admittedly only tools to disaggregate cause from effect and only a simple referential system to understand the behaviors of the majority of EE firms (Narula, 2012). There are still significant variations in the behaviors of EE firms that are not entirely explained by the theories employed by this thesis, and this provides opportunities for further inquiries.

### **6.3 Future Research Directions**

Future research could continue to discuss how the unique context of EE firms learning from global linkages could help to advance the theories (Cuervo-Cazurra, 2012) employed in this thesis. Researchers can adopt multi-context and inter-context research design to fully explore the focal phenomenon. According to Hotho, Lyles, and Easterby-Smith (2015), multi-context research designs (e.g., utilizing data collected from a larger sample of countries, either a single firm operating in multiple locations or multiple firms in multiple locations) can facilitate the identification of new context effects, such as possible mediating and moderating contextual effects, that could be tested using more advanced statistical techniques through various types of multi-level

modeling. Adopting a multi-context research design may thus lead to the extension and validation of more complex theories. Other suggested research designs are inter-context research designs which focus on phenomenon that involve actors from diverse contexts or different countries (e.g., international joint ventures, international alliances, international acquisitions, or activities involving geographically dispersed sub-units). Such research designs utilize more complex organizational conditions in the testing of extant theories and stimulates “extensions to theory by highlighting the need for additional constructs and relationships among constructs in order to for ... theories to be more widely applicable” (Hotho, Lyles, & Easterby-Smith, 2015, p.100). The advantage of multi-context research designs is that they can capture occurrences of a phenomenon within multiple contexts, while the advantage of inter-context research designs is that they allow researchers to capture phenomena are across contexts (Hotho, Lyles, & Easterby-Smith, 2015).

Another future research direction is the potential utilization of other theoretical lenses to inform the uniqueness of the learning by, and behaviors and evolution of, EE firms in GVC linkages. For instance, other schools of institutional theory (See Hotho & Pedersen, 2012, Hotho & Pedersen, 2012) may offer interesting lenses with which understand learning by EE firms. Knowledge fungibility and congruity (Asmussen, Foss, & Pedersen, 2013) may offer alternative ways to explore how EE firms process the knowledge transmitted in GVCs. Similarly, other ACAP perspectives (See Lane, Koka, & Pathak, 2006, Lewin, Massini, & Peeters, 2011, Volberda, Foss, & Lyles, 2010, Zobel, 2017) may offer additional insights on the learning by EE firms from GVC linkages. Further, future research may apply a broader notion of organizational learning to explain learning by EE firms, such as organizational unlearning and forgetting (Hotho, Lyles, & Easterby-Smith, 2015) and transactive memory systems (Argote, 2015). These under-explored learning processes may contribute to generating more

holistic understanding on learning by EE firms in global linkages. Furthermore, the role of relational embeddedness and the value-creation role of EE firms in GVC linkages may be developed by engaging the idea of the division of entrepreneurial labor proposed by Buckley and Prashantham (2016). This idea, which emphasizes the potential for value creation in global interfirm networks by achieving mutual dependence and redressing the power imbalances between SMEs and MNEs which orchestrate the network (Buckley *et al.*, 2016), shares similar origins with the value-creation role discussed in this thesis, but may offer different ways to frame research questions.

The third direction could be to utilize two or more theories to explore or contrast the same phenomena. For example, future attempts to combine the parallel pathways of the ACAP model with other theories (e.g., transaction costs theory) is a possible option. For instance, Cuervo-Cazurra and Rui (2017) illustrated how the EE context allows for the perspectives of agency theory and information asymmetry to explain barriers to the absorptive capacity of EE firms. Similarly, combining institutional theory and social network theory might be possible as there could be network-level effects as institutions create clusters within networks which may alter the flow of information in those networks (Connelly, Ketchen, & Hult, 2013). In addition to combining theories, future research attempts might contradict two theories by simultaneously utilizing resource dependence theory and social network theory to contrast findings when EE firms expand linkages with GVCs (Connelly, Ketchen, & Hult, 2013), given their different reasoning and prediction on power-dependence positions. Based on the third direction, the findings might reveal how two theories may coevolve and/or contradict each other, resulting in further theory refinement and advancement.

#### **6.4 Further Considerations for Policymakers and Practitioners**

Policymakers and governments in EEs should be aware of the distribution of benefits within GVCs. It is not sufficient to attract low-cost locations for value chain activities only. Encouraging EE firms to learn and upgrade their competitive positions along the value curve in order to retain the value-chain rents within emerging economies must also be ensure as much as possible (Buckley & Strange, 2015). Next, policymakers should ensure social upgrading in addition to economic upgrading (Barrientos, Gereffi, & Rossi, 2011, Gereffi & Lee, 2016). GVCs should not be viewed as only impacting on the development of EE firms, but must also be viewed in terms of their impact on work conditions and corporate social responsibility (CSR) practices, and therefore host country institutions must be closely monitored (Hernández & Pedersen, 2017). Lastly, policies should support EE firms in configuring and orchestrating their own value chains in order to integrate their own capabilities with those of firms in different geographic locations. Coordinating value chains at regional levels could be an initial step for EE firms (Mudambi & Puck, 2016, Suder, Liesch, Inomata, Mihailova, & Meng, 2014, Verbeke & Asmussen, 2016).

For practitioners, the changing nature of international industrial production demands that executives who run business operations change their mental schemas. First, the changing technologies (e.g., digitalization, 3D printing, robotics, and automations) may change the economies of scale and the configuration of value chains. These technologies potentially affect how MNEs configure GVCs in terms of the geographical span and density of GVCs, thereby changing the way EE firms participate in the GVCs of MNEs (Laplume, Petersen, & Pearce, 2016). Second, the nature of global dispersion of industrial production calls for new managerial skills on the interface between EE firms and the GVCs of MNEs. At an abstract level, the ability to coordinate external organizations into the focal firm's strategy, while allowing for

flexibility for entrepreneurial decisions of the partner organizations, is the heart of the skill set required for networked global business systems (Buckley & Prashantham, 2016). Finally, as a result of increasingly complex and deepening value networks, individual firms need to reduce potential leakages of critical or proprietary information and technology (Cano-Kollmann, Cantwell, Hannigan, Mudambi, & Song, 2016). Managers have to think about a protection mechanism that allows firms to benefit from sourcing products and services while minimizing the risk of information misappropriation associated with weak legal environments and outsourcing arrangements (Gooris *et al.*, 2016).

## **6.5 Ending Remarks**

In conclusion, learning by and upgrading of EE firms is highly important for the economic development of EEs. It eventually enables interdependence between actors and economies in GVC linkages. However, learning is not easy, and thus upgrading is not readily achieved. Scholarly efforts from a wide range of disciplines may well be a way forward in offering rigorous explanations and practical solutions to achieve the goals of learning and upgrading.



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## **Appendix A: Ethical Clearance**

Appendix A1: Application form to Human Research Ethics Committee

Appendix A2: Attachment 1 (Introductory letter to participants)

Appendix A3: Attachment 2 (Participant information sheet)

Appendix A4: Attachment 3 (Consent form for participants)

Appendix A5: Human ethics protocol 2016/505 – Final approval notice

## Appendix A1: Application form to Human Research Ethics Committee

### HUMAN RESEARCH ETHICS COMMITTEE Application Form

Created by: **u4723654**  
Record number: **8476**  
Protocol type: **Expedited Ethical Review (E2)**  
Protocol number: **2016/505**

Date entered: **16/08/2016**  
Ethics program type: **Postgraduate**  
Requested start date: **05/09/2016**  
Requested end date: **31/01/2018**

Protocol title: **Acquiring and Utilising Knowledge in Global Value Chains by Emerging Economy Firms**

Investigators		
Name	Role	Department
Cui, Lin	Supervisor	Research School of Management, College of Business and Economics, ANU
Soontornthum, Tanyaporn	Primary investigator	Research School of Management, College of Business and Economics, ANU

#### Investigators Detailed

**Name:** Cui, Lin      **Role:** Supervisor

**Expertise:** PhD in International Business. Lin's research focuses on the investigation of the strategy of firms in emerging economies and the interaction of firm strategy and external institutional environments. He has conducted research projects in the fields of internationalization strategy, corporate governance, knowledge transfer, and cross-cultural management.

**Name:** Soontornthum, Tanyaporn      **Role:** Primary investigator

**Expertise:** BA International Affairs (Thammasat Univ.), MSc. Management (SIU), MA Business Economics (UCL). He teaches at Thammasat University PPE (Philosophy, Politics and Economics) programme where he served as the deputy director during 2013 - 2015. His previous position was at University of The Thai Chamber of Commerce (UTCC) where he started as a lecture in international business. He regularly participate with Policy-Research

## Appendix A1: Application form to Human Research Ethics Committee (Cont.)

### HUMAN RESEARCH ETHICS COMMITTEE

#### Application Form

Platform (PRP) project of Thailand Research Fund. Prior to pursue his academic career, he was an analyst in airline industry and worked with United Airlines and Bangkok Airways.

He is particularly looking at catch-up and upgrading of emerging economy firms in the context of Global Value Chains (GVCs) from institutional theory and absorptive capacity (ACAP) perspectives.

#### External Investigators

Name	Role	Institution

#### Departments

Primary	Department	Faculty
Yes	Research School of Management	College of Business and Economics

#### Project Questions Detailed

##### Description of Project

**Describe the research project in terms easily understood by a lay reader, using simple and non-technical language.** This research is examining the issues related to learning and innovation of emerging economy firms that act as producers or suppliers for major foreign customers. The purpose is to explore their experiences as being a part of global supply chains and its impact on learning and innovations of their organizations.

Southeast Asian countries focusing on export manufacturing represent an interesting context for studying emerging economy firms technology catch-up in the context of global supply chains. Thailand and Vietnam offer attractive locations for this research due to their significant increase in the participation in global supply chains. Moreover, these emerging economies are currently facing upgrading challenges, meaning that the firms need to move beyond their low-cost and labour-intensive manufacturing functions. Such circumstance makes knowledge transfer and innovation a crucial topic for them. Hence located this study in Thailand and Vietnam economies could advance the debates and generate insight implications for practitioners and policy-makers.

##### Location of Data Collection

**HUMAN RESEARCH ETHICS COMMITTEE**  
**Application Form**

Australia No

Overseas Yes

**Provide country / area where data collection will be conducted** Thailand and Vietnam  
(mainly in industrial district areas)

**Aims of the Project**

**List the hypothesis and objectives of your research project.** Objective for study 1: to understand the condition in which the transfer of knowledge from value chain constituents to EM firms occurs.

Hypotheses for study 1 include.

Hypothesis 1: Behavioural integration mediates the positive relationship between GVC linkage and knowledge transfer to EM firms

Hypothesis 2: Industry globalization moderates the effect of GVC linkage on behaviour integration, such that the indirect relationship between GVC linkages and knowledge transfer via behavioural integration is stronger when the level of industry globalization is high as opposed to low.

Hypothesis 3: Industry dynamism moderates the effect of GVC linkage on behaviour integration, such that the indirect relationship between GVC linkages and knowledge transfer via behavioural integration is stronger when the level of industry dynamism is high as opposed to low.

Hypothesis 4: Market munificence moderates the effect of GVC linkage on behaviour integration, such that the indirect relationship between GVC linkages and knowledge transfer via behavioural integration is weaker when the level of market munificence is high as opposed to low.

Objective for study 2: to investigate the extent to which different modes of learning enable EM firms to utilize absorbed knowledge for their innovations (important in catch-up and upgrading process)

Hypotheses for study 2 include:

Hypothesis 1: There is an inverted U-shaped relationship between the diversity of technological knowledge accessed by EM firms from GVCs and the firms innovation performance.

Hypothesis 2: There is an inverted U-shaped relationship between the distance of technological knowledge accessed by EM firms from GVCs and the firms innovation performance.

Hypothesis 3a: An EM firms assimilation-based ACAP positively moderates the inverted U-shaped relationship between the diversity of technological knowledge accessed by EM firms from GVCs and the firms exploitative innovation.

Hypothesis 3b: An EM firms assimilation-based ACAP positively moderates the inverted U-shaped relationship between the distance of technological knowledge accessed by EM firms from GVCs and the firms exploitative innovation.

Hypothesis 4a: An EM firms transformation-based ACAP positively moderates the inverted U-shaped relationship between the diversity of technological knowledge accessed by EM firms from GVCs and the firms exploratory innovation.

Hypothesis 4b: An EM firms transformation-based ACAP positively moderates the inverted U-shaped relationship between the distance of technological knowledge accessed by EM firms from GVCs and the firms exploratory innovation.

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**Methodology**

**In language appropriate for a lay reader, explain why the methodological approach minimises the risk to participants. (For surveys, include justification of the sample size).** The methodology employed is quantitative approach. We expect to receive 250-300 participating firms with two respondents from each firm. We will randomly select 1000 firms from three major industrial districts in Vietnam and Thailand. An introductory letter will be sent to the firms to elaborate the academic objectives of the survey, the voluntary and anonymous nature of the survey, and the measures to be used to ensure the safety of the data collected. A consent form will be sent together with the introductory letter. Only when written consent is received will the firm be sent the questionnaires. Each firm will answer two questionnaires, one for a CEO, and one for a senior executive. Participants can withdraw from the survey at anytime, and/or request their responses be deleted from the data set and not be used in the study.

**Provide the survey method, a list of the questions to be asked or an indicative sample of questions. These should give a good sense of the most intrusive/sensitive areas of questioning.** The survey questionnaire will be sent by mail, email or fax. The survey process is self-administrated. A draft of the questionnaire is attached to this application. The following are the example questions:

Please refer to the period between 2011-2012 and indicate your (dis)agreement with the following statements regarding technological knowledge of your partners in global supply chains. (7-point scale from strongly disagree to strongly agree)

1. Our foreign partners (e.g., customers or suppliers) present market information from a diversified and wide-ranging customer portfolio.
2. Our foreign partners present knowledge of multiple market segments.
3. Our foreign partners present R&D expertise consisting of technical knowledge from a variety of background.
4. Our foreign partners (e.g., customers or suppliers) present thorough understanding and experience of current customers.
5. Our foreign partners present in-depth knowledge of the key market segment that we focus on.
6. Our foreign partners present thorough technical knowledge and skills within our specialized domain.

**What mechanisms do the researchers intend to implement to monitor the conduct and progress of the research project? For example:**

**How often will the researcher be in touch with the supervisor?**

**Is data collection going as expected? If not, what will the researcher do?**

**Is the recruitment process effective?**

**How will the researcher monitor participants willingness to continue participation in the research project, particularly when the research is ongoing?** The researcher will contact the supervisor on a weekly basis, or anytime if it is necessary.

CEOs and senior executives are usually very busy and mobile. They are likely to participate in an academic survey if it is considered relevant and worthwhile to make the contribution. Accordingly, we communicate the significant of this study and the importance of informants' participation in the introductory letter and information sheet.

As there may be a considerable time lag between CEOs and senior executives giving the consent to participate and actually finds time to complete the questionnaire, we plan to send out two rounds of reminders in one month intervals, to improve the response rate. We aim to a total

## Appendix A1: Application form to Human Research Ethics Committee (Cont.)

### HUMAN RESEARCH ETHICS COMMITTEE Application Form

number of 200 usable returns for this study.

#### Participants

**Provide details in relation to the potential participant pool, including:**

**target participant group;**

**identification of potential participants;**

**initial contact method, and**

**recruitment method.** The study will be conducted with one top management (e.g., CEOs) and one senior executives (such as Chief Technology Officer(CTO)/Chief Innovation Officer(CIO)/Chief Operation Office(COO), or a director who involve in strategy development and/or operations). It is required, but not strictly, that participants should have been working with the current company for 5 years.

The participants can be identified from 1) exporter list by Department of International Trade Promotion 2) the list provided by administrative committees of each Science Park or cluster.

The disclosed contact details of the participants will be used for initial contact. The introductory letter will include local contact details (telephone, email) of the investigator. This is to allow potential participants to ask questions and provide comments.

**Proposed number of participants 1000**

**Provide details as to why these participants have been chosen?** From the firm list are provided by 1) exporter list by Department of International Trade Promotion 2) the list provided by administrative committees of each Science Park or cluster. The sample frame includes more than 11,910 firms from Thailand and Vietnam altogether, and 1000 firms will be randomly selected as final sampling targets.

#### Cultural and Social Considerations/Sensitivities

**What cultural and/or social considerations/sensitivities are relevant to the participants in this research project?** This survey does not involve culturally or socially sensitive issues.

#### Incentives

**Will participants be paid or any incentives offered? If so, provide justification and details.** Participants will not be rewarded financially. The researcher will provide a summary of research findings to all participants at a later stage of the study (after March 2018).

#### Benefits

**What are the anticipated benefits of the research?** we expect that information gained from this research will improve understanding of the learning and innovation of emerging economy supplier firms and we hope that this knowledge will improve industrial policy of emerging economies participating in global supply chains. The results of the study may also lead onto further studies into the conditions leading to catch-up and upgrading of resource-poor and technologically backward firms in emerging economies.

**To whom will the benefits flow?** The resource-poor and technologically backward firms in

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emerging economies.

**Informed Consent**

Indicate how informed consent will be obtained from participants. At least one of the following boxes **MUST** be ticked 'Yes'.

In writing Yes

Return of survey or questionnaire No

Orally No

Other No

If Oral Consent or Other, provide details.

**Confidentiality**

Describe the procedures that will be adopted to ensure confidentiality during the collection phase and in the publication of results. The participants' responses will be treated with full confidentiality. The information gained from this research will only be accessed and analysed by myself and the research team. No research participant will be identified from any publications without permission. Publication of the data will be in aggregate form only, no information will be released if it may be used to identify the participants or their firms.

**Data Storage Procedures**

Provide an overview of the data storage procedures for the research. Include security measures and duration of storage. The returned questionnaire will be stored in the supervisor's office Copland Building (24) at the The Australian National University (ANU). No one, except for the supervisor and his school administrator may have access to the office. The questionnaires will be kept for 12 months from the completion of the survey. The questionnaires will then be destroyed and disposed to the "confidential" trash bin in the school.

Electronically entered data will be stored on the researchers personal computers and laptops will be password-protected. The data also will be stored at the supervisors office computer located at Copland Building (24), ANU in order to securely backed up.

After the data is no longer needed for the current research, it may be deleted by myself and the research team.

**Feedback**

Provide details of how the results of the research will be reported / disseminated, including the appropriate provision of results to participants. If appropriate, provide details of any planned debriefing of participants. The respondents will be provided the summarized survey results 3 months from the completion of the survey via email directly or a shared drive that does not require login information. The feedback report will be limited to aggregate data only, including descriptive statistics of major variables included in the survey. The feedback report will be limited to 5 pages in total. They will be asked in the consent form,

## Appendix A1: Application form to Human Research Ethics Committee (Cont.)

### **HUMAN RESEARCH ETHICS COMMITTEE Application Form**

that if they would like to receive the feedback report, and if so, to what address.

#### **Supporting Documentation**

**Please ensure electronic copies of any supporting documentation have been uploaded the documents tab of the relevant protocol.**

**Has this work been approved by another Human Research Ethics Committee (HREC)?** No

**If yes, please give the name of the approving HREC.**

#### **Funding**

**Is this research supported by external funding?** No

**Provide the name/s of the external sources of funding. Please include grant number/s if available.**

**Is the research conducted under the terms of a contract of consultancy agreement between the ANU and the funding source?** No

**Describe all the contractual rights of the funding source that relate to the ethical consideration of the research.**



Appendix A1: Application form to Human Research Ethics Committee (Cont.)

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**High Risk One Summary**

Question	Answer
Is this a clinical trial?	No
Does this research involve the intentional recruitment or issues involving Aboriginal and / or Torres Strait Islander Peoples?	No

**High Risk Two Summary**

Question	Answer
Does this research involve Human Genetics?	No
Does this research involve Human Stem Cells?	No
Does this research involve Women who are pregnant and the Human Foetus?	No
Does the research involve people highly dependent on medical care who may be unable to give consent?	No
Does the research involve people with a cognitive impairment, an intellectual disability or a mental illness?	No
Does this research involve an intention to study or expose or is likely to discover illegal activity?	No
Does this research involve human gametes (eggs or sperm)?	No
Does this research involve excess ART embryos?	No

**Expedited Questions Summary**

Question	Answer
Third Party Identification	No
Children or Young People	No
Dependent or Unequal Relationship	No
Membership of a Group, or Related Issues	No
Physical Harm	No
Psychological Harm (includes Devaluation of Personal Worth)	No
Social Harm	No
Economic Harm	No
Legal Harm	No
Covert Observation	No
Deception	No
Sensitive Personal Information	No

Appendix A1: Application form to Human Research Ethics Committee (Cont.)

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Question	Answer
Overseas Research	Yes
Collection, use or disclosure of personal information WITHOUT the consent of the participant	No

**Questions Detailed**

**Overseas Research Yes**

**Will the research be conducted in a politically stable country? Yes**

**Will details of a Local Contact be provided for participants to contact after the researcher has left the area? Yes**

**Will there be appropriate reporting back to the community and/or a direct flow of benefits to the community? Yes**

## Appendix A1: Application form to Human Research Ethics Committee (Cont.)

### HUMAN RESEARCH ETHICS COMMITTEE Application Form

#### Supporting Documentation

Please ensure electronic copies of the supporting documentation have been uploaded into the documents tab of your protocol

These may include (please circle the relevant answer):

List of indicative questions	Y/N
Copy of questionnaire / survey	<input checked="" type="radio"/> Y/N
Invitation or introductory letter/s	<input checked="" type="radio"/> Y/N
Publicity material (posters etc.)	Y/N
Information sheet	<input checked="" type="radio"/> Y/N
Consent form	<input checked="" type="radio"/> Y/N
External approval documentation	Y/N
Research visa (if applicable)	Y/N
Other (specify below)	Y/N

For other, please specify:

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**SIGNATURES AND UNDERTAKINGS**

**PROPOSER OF THE RESEARCH**

I certify that all the persons listed in this protocol have been fully briefed on appropriate procedures and in particular that they have read and are familiar with the national guidelines issued by the National Health and Medical Research Council (the National Statement on Ethical Conduct in Human Research 2007).

I certify that the above is as accurate a description of my research proposal as possible and that the research will be conducted in accordance with the National Statement on Ethical Conduct in Human Research 2007. I also agree to adhere to the conditions of approval stipulated by the ANU Human Research Ethics Committee (HREC) and will cooperate with HREC monitoring requirements. I agree to notify the Committee in writing immediately of any significant departures from this protocol and will not continue the research if ethical approval is withdrawn and will comply with any special conditions required by the HREC.

Signed:.....

Date: 16/08/2016

**ANU SUPERVISOR**

I certify that I shall provide appropriate supervision to the student to ensure that the project is undertaken in accordance with the undertakings above:

Signed:.....

Date: 16/08/2016

**AS FROM MONDAY 21ST OCTOBER 2013 THE SIGNATURE OF THE HEAD OF ANU DEPARTMENT/GROUP/CENTRE IS NO LONGER REQUIRED.**

## Appendix A2: Attachment 1 (Introductory letter to participants)

This is an untranslated and unformatted draft of the introductory letter. Final version will be translated into Thai and Vietnamese languages, and be formatted and printed on a template with ANU logo

<Date>

<Company>

<Address> <Post code>

Dear <Title> <First name> <Last name>,

Good day! We are a team of researchers examining the issues related to learning and innovation of emerging economy firms that act as producers or suppliers for major foreign customers. Southeast Asian countries focusing on export manufacturing represent an interesting context for studying emerging economy firms' technology catch-up in the context of global supply chains. Thailand and Vietnam offer attractive locations for this research due to their significant increase in the participation in global supply chains. Moreover, these emerging economies are currently facing upgrading challenges, meaning that the firms need to move beyond their low-cost and labour-intensive manufacturing functions. Such circumstance makes knowledge transfer and innovation a crucial topic for them. Hence located this study in Thailand and Vietnam economies could advance the debates and generate insight implications for practitioners and policy-makers.

This research has received unconditional approval from the Human Research Ethics Committee at the Australian National University, protocol number 2016/505. The survey asks questions about being a part of global supply chains and its impact on learning and innovations of your organization. Please address each item carefully, but do not spend considerable time on any particular question. Participation in this study is completely voluntary.

For this project to be successful, it is necessary for you to respond as honest as possible, even if the information that you provide is not favourable. Some of the issues that we seek to address here reflect both good and bad elements of your experience in global supply chains. To find out more about the project and how to participate, please read the attached information sheet.

Your participation is extremely valuable to us and your help is highly appreciated!

**Sincerely Yours,**  
**Tanyaporn Soontornthum**  
**Lecturer, Thammasat University**  
**PhD Candidate, The Australian National University**  
**Email: [tanyaporn.soontornthum@anu.edu.au](mailto:tanyaporn.soontornthum@anu.edu.au)**

## Appendix A3: Attachment 2 )Participant information sheet(



### Participant Information Sheet

#### Researcher:

My name is Tanyaporn Soontornthum, a Lecturer at Thammasat University, Thailand and a PhD candidate at Research School of Management, College of Business and Economics, the Australian National University (ANU). You are invited to take part in this research to explore your experience as suppliers or producers in global supply chains. This research is a part of PhD dissertation carried out at ANU. Before you decide whether to take part in this study it is important that you understand what the research is for and what you will be asked to do. Please take time to read the following information and discuss it with others if you wish

**Project Title:** Acquiring and Utilising Knowledge in Global Value Chains by Emerging Economy Firms

#### General Outline of the Project:

- **Description and Methodology:** This research is examining the issues related to learning and innovation of emerging economy firms that act as producers or suppliers for major foreign customers. The purpose is to explore your experiences as being a part of global supply chains and its impact on learning and innovations of your organization. The methods employed in this study is quantitative approach. You will be asked a ranged of questions about learning you have obtained from customers/partners in global value chains.
- **Participants:** Specifically, the study will be conducted with one top management (e.g., CEOs) and one senior executives (e.g., CIOs, CTOs or COOs or a director who involve in strategy development and/or operations) of firms in Thailand and Vietnam. It is required, but not strictly, that participants should have been working with the current company for 5 years. We expect to receive 250-300 participating firms with two respondents from each firm.
- **Use of Data and Feedback:** The results of this study may be used in Thesis and published in peer-reviewed journals as well as presented at conferences. The respondents will be provided the summarized survey results 3 months from the completion of the survey via a shared drive that does not require login information. The feedback report will be limited to aggregate data only, including descriptive statistics of major variables included in the survey.

#### Participant Involvement:

- **Voluntary Participation & Withdrawal:** Participation in this study is completely voluntary. If you decide to take part you can keep this information sheet. You will also be asked to sign a consent form. The participants can refuse to answer a question and withdraw from this study until publication. In the case of withdrawal, the data will be destroyed and not be used.
- **Location and Duration:** The survey will take approximately 30 minutes for each respondent. If you choose to take part, I will organise a method to deliver the questionnaires at your convenience.
- **Risks:** The third-party identification is low from the information you provide as most questions we ask involve retrospective information from your perception regarding your experiences as suppliers or producers in global supply chains in the past 3-5 years. Nevertheless, participants can decline to answer the questions they feel may identify them. Similarly, participants can decline to answer the questions they perceive commercially sensitive. With our best efforts to hide your identity as a respondent, we would like to assure that all the information will be used for research purpose only and will be published in aggregated form. Hence, no individual firm and manager can be identified from publications.

## Appendix A3: Participant information sheet (Cont.)



- **Benefits:** we expect that information gained from this research will improve understanding of the learning and innovation of emerging economy supplier firms and we hope that this knowledge will enhance industrial policy of emerging economies participating in global supply chains. The results of the study may also lead onto further studies into the conditions leading to catch-up and upgrading of resource-poor and technologically backward firms in emerging economies.

### Confidentiality:

- **Confidentiality:** Your responses will be treated with full confidentiality. The information gained from this research will only be accessed and analysed by the research team consisting of myself and A/Prof. Lin Cui, who is the research supervisor in this project. Publication of the data will be in aggregate form only, no information will be released if it may be used to identify the participants or their firms.

### Privacy Notice:

In collecting your personal information within this research, the ANU must comply with the Privacy Act 1988. The ANU Privacy Policy is available at [https://policies.anu.edu.au/ppi/document/ANUP\\_010007](https://policies.anu.edu.au/ppi/document/ANUP_010007) and it contains information about how a person can:

- Access or seek correction to their personal information;
- Complain about a breach of an Australian Privacy Principle by ANU, and how ANU will handle the complaint.

### Data Storage:

- **Where:** The returned questionnaire will be stored in the supervisor's office Copland Building (24) at the The Australian National University (ANU). No one, except for the supervisor and his school administrator may have access to the office. The questionnaires will be kept for 12 months from the completion of the survey. The questionnaires will then be destroyed and disposed to the "confidential" trash bin in the school. Electronically entered data will be stored on the researchers' personal computers and laptops will be password-protected. The data also will be stored at the supervisor's office computer located at Copland Building (24), ANU in order to securely backed up.
- **How long:** The data usually must be stored a period of at least five years from the date of any publication arising from the research. Moreover, after my PhD study, I will arrange for the continued storage of research data at the University with my supervisor. The requirement of such storage is a feature of the Australian Code for the Responsible Conduct of Research.
- **Handling of Data following the required storage period:** After the data is no longer needed for the current research, it may be deleted by myself and the research team.

### Queries and Concerns:

**Contact Details for More Information:** If you have any questions or inquiries, please contact the primary investigator of the project as detailed below.

Tanyaporn Soontornthum, Phone: + 61(0)45 246 6539; Email: [tanyaporn.soontornthum@anu.edu.au](mailto:tanyaporn.soontornthum@anu.edu.au)

Dr Lin Cui, Associate Professor; Email: [lin.cui@anu.edu.au](mailto:lin.cui@anu.edu.au)

Dr Vinh Lu, Senior Lecturer; Email: [vinh.lu@anu.edu.au](mailto:vinh.lu@anu.edu.au)

**Contacts in Thailand:** Tanyaporn Soontornthum, Phone: +66(0)92-826-9451; +66(0)91-252-8946;  
Email: [main.tan.soo@gmail.com](mailto:main.tan.soo@gmail.com)

## Appendix A3: Participant information sheet (Cont.)



### **Ethics Committee Clearance:**

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee (Protocol 2016/505). If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager  
The ANU Human Research Ethics Committee  
The Australian National University  
Telephone: +61 2 6125 3427  
Email: [Human.Ethics.Officer@anu.edu.au](mailto:Human.Ethics.Officer@anu.edu.au)



## Appendix A4: Attachment 3 )Consent form for participants(



### WRITTEN CONSENT for Participants

#### **Acquiring and Utilizing Knowledge from Global Value Chains by Emerging Economy Firms**

I have read and understood the Information Sheet you have given me about the research project, and I have had any questions and concerns about the project (Acquiring and Utilizing Knowledge from Global Value Chains by Emerging Economy Firms) addressed to my satisfaction.

I agree to participate in the project. YES ☐ NO ☐

Would you like to receive the feedback report? YES ☐ NO ☐

If yes, please provide email address: \_\_\_\_\_

Signature:.....

Date:.....

## Appendix A5: Human ethics protocol 2016/505 -Final approval notice

### Tanyaporn Soontornthum

---

**From:** aries@anu.edu.au  
**Sent:** Thursday, 8 September 2016 1:43 PM  
**To:** Tanyaporn Soontornthum  
**Cc:** Human.Ethics.Officer@anu.edu.au; Lin Cui  
**Subject:** Human Ethics Protocol 2016/505 - Approval

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Mr Tanyaporn Soontornthum,

Protocol: 2016/505  
Acquiring and Utilising Knowledge in Global Value Chains by Emerging Economy Firms

I am pleased to advise you that your Human Ethics application received approval by the Chair of the Humanities & Social Sciences DERC on the 08/09/2016.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved.  
Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.
2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.
3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.
4. Please advise the HREC if you receive any complaints about the research work.
5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

Human Ethics Officer  
Research Integrity & Compliance  
Research Services Division  
Level 2, Birch Building 36  
Science Road, ANU  
The Australian National University  
Acton ACT 2601

T: 6125-3427  
E: [human.ethics.officer@anu.edu.au](mailto:human.ethics.officer@anu.edu.au)  
W: <https://services.anu.edu.au/research-support/ethics-integrity>

## **Appendix B: Questionnaires**

Appendix B1: Material for Study 1 (Respondent One)

Appendix B2: Material for Study 1 (Respondent Two)

Appendix B3: Material for Study 2 (Respondent One)

Appendix B4: Material for Study 2 (Respondent Two)

Appendix B5: Material for Study 3

## Appendix 1: Material for Study 1 (Respondent One)



(Respondent 1) □□□□/□□□□

### LEARNING AND UTILIZING KNOWLEDGE BY EMERGING ECONOMY FIRMS

#### CONSENT AND BENEFIT

I have read and understood the Information Sheet you have given me about the research project and I agree to participate in the project	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
We will provide a feedback report to you when the project is completed. The report will provide industry-level data regarding multi-dimensions of absorptive capacity. If you would like to receive the report, please provide your email address.	
<input type="checkbox"/> Yes (please provide email address: _____)	
<input type="checkbox"/> No	

#### DEMOGRAPHIC & WORK HISTORY

Company name: _____	
Your Job Title: _____	I have worked in this position for _____ years
Your direct contact number: _____	
<b>IN TOTAL</b> , I have been in <b>SENIOR EXECUTIVE POSITIONS</b> (e.g., serving as CEO, MD, GM, director, manager) in this company for _____ years [ <input type="checkbox"/> less than 3 years <input type="checkbox"/> more than 3 years <input type="checkbox"/> more than 5 years]	
Do you produce products or supply intermediate goods for <b>foreign customers</b> ? <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Which are the positions in your organizations that you consider them as the members of your top management team?</b> Please specify at least 3 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	
<b>Which are the positions in your top management team that deal with operations, innovation and/or technology?</b> Please specify at least 2 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	

Appendix B1: Material for Study 1 (Respondent One) (Cont.)

(Respondent 1) □□□□/□□□□

**KNOWLEDGE TRANSFER**

<i>Referring to 1-2 years ago (period 2015-2016), to what extent have you learned from your foreign customers or partners in global supply chains? In terms of ...</i>		Not at All							A Great Extent	
New technological expertise		1	2	3	4	5	6	7		
New marketing expertise		1	2	3	4	5	6	7		
Product development		1	2	3	4	5	6	7		
Managerial techniques		1	2	3	4	5	6	7		
Manufacturing process		1	2	3	4	5	6	7		

**COMPANY DEMOGRAPHICS**

1	Our company has been operating for _____ years.						
2	Our company has been serving international market for _____ years.						
3	Please identify a <b>PRINCIPAL INDUSTRY</b> in which your company operates. <input type="checkbox"/> Automotive parts & Motorcycles <input type="checkbox"/> Machinery and industrial equipment <input type="checkbox"/> Consumer electronics & electronics components <input type="checkbox"/> Computer hardware and IT <input type="checkbox"/> Medical equipment <input type="checkbox"/> Chemicals <input type="checkbox"/> Telecommunications <input type="checkbox"/> Textile and clothing <input type="checkbox"/> Foods & food Processing <input type="checkbox"/> Rubber and plastics <input type="checkbox"/> Other. Please specify _____						
4	Please identify your company's <b>OWNERSHIP TYPE</b> . Is your company a part of family business group? <input type="checkbox"/> Yes <input type="checkbox"/> No						
5	Which is best described your company's ownership type? <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> State-owned firm <input type="checkbox"/> Other. Please specify _____						
6	Which is best described your company's equity ownership? <input type="checkbox"/> joint venture between Thai and foreign partners <input type="checkbox"/> Wholly-owned by Thais <input type="checkbox"/> Wholly-owned by non-Thais <input type="checkbox"/> Other, Please specify _____						
When <b>actual data</b> are not available, please use your <b>best estimate</b> to answer the question							
		<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
7	Please provide a number of your company's <b>FULL-TIME</b> employees						

**PAST PERFORMANCE**

<i>Referring to 5-6 years ago (period 2011-2012), how was your company's past performance during that period? In terms of ...</i>		Extremely Poor				Extremely Good	
Sales growth		1	2	3	4	5	6
Market shares		1	2	3	4	5	6
Competitive positions		1	2	3	4	5	6
Profitability of sales		1	2	3	4	5	6

Appendix B1: Material for Study 1 (Respondent One) (Cont.)

(Respondent 1) □□□□/□□□□

**FINANCIAL RESOURCES**

FINANCIAL RESOURCES									
Referring to 3-4 years ago (period 2013-2014), please indicate your (dis)agreement with the following statements regarding your company's past financial slack during that period.	Strongly Disagree					Strongly Agree			
Our company's retained earnings have been sufficient for market expansion	1	2	3	4	5	6	7		
Our company has a pool of financial resources that can be used on a discretionary basis	1	2	3	4	5	6	7		
Our company is able to secure necessary bank loans.	1	2	3	4	5	6	7		

**DEGREE OF INTERNATIONALIZATION**

When <b>actual data</b> are not available, please use your <b>best estimate</b> to answer the questions						
	2011	2012	2013	2014	2015	2016
What percentage (%) of <b>FOREIGN SALES</b> were made to <b>TOTAL SALES</b> ?						
What percentage (%) of <b>FOREIGN PROFITS</b> were made to <b>TOTAL PROFITS</b> ?						
If applicable, what percentage (%) of <b>FOREIGN ASSETS</b> were made to <b>TOTAL ASSETS</b> ?						
If applicable, what percentage (%) of <b>OVERSEA SUBSIDIARIES</b> were made to <b>TOTAL SUBSIDIARIES</b>						

**This is it! Thank you very much for your time ☺**

## Appendix B2: Material for Study 1 (Respondent Two)



(Respondent 2) □□□□/□□□□

### LEARNING AND UTILIZING KNOWLEDGE BY EMERGING ECONOMY FIRMS

#### CONSENT AND BENEFIT

I have read and understood the Information Sheet you have given me about the research project and I agree to participate in the project ☐ Yes ☐ No

We will provide a feedback report to you when the project is completed. The report will provide industry-level data regarding multi-dimensions of absorptive capacity. If you would like to receive the report, please provide your valid email address.

☐ Yes (please provide email address: \_\_\_\_\_)

☐ No

#### DEMOGRAPHIC & WORK HISTORY

**Company name:** \_\_\_\_\_

**Your Job Title:** \_\_\_\_\_ I have worked in the current position for \_\_\_\_\_ years

**Your direct contact number:** \_\_\_\_\_

**IN TOTAL**, I have been in **SENIOR EXECUTIVE POSITIONS** (e.g., serving as MD, GM, director, manager) in this company for \_\_\_\_\_ years [☐less than 3 years ☐more than 3 years ☐more than 5 years]

Do you produce products or supply intermediate goods for **foreign customers**? ☐YES ☐NO

**Which positions** are considered as **members of top management team** in your organization?  
Please specify at least 3 titles: 1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_  
5. \_\_\_\_\_

**Which position** in your top management team **deals with operations, innovation and/or technology**?  
Please specify at least 2 titles: 1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_  
5. \_\_\_\_\_

#### SUPPLY CHAIN ADAPTATION

<i>Referring to 3-4 years ago (period 2013-2014), to what extent have you adapted in order to maintain relationships with your TOP 5 foreign customers/partners in global supply chains? In terms of...</i>	Not At all							A Great Adaptation
Product technology	1	2	3	4	5	6	7	
Production technology	1	2	3	4	5	6	7	
Overall business conduct	1	2	3	4	5	6	7	

**This is it! Thank you very much for your time ☺**

## Appendix B3: Material for Study 2 (Respondent One)



(Respondent 1) □□□□/□□□□

### LEARNING AND UTILIZING KNOWLEDGE BY EMERGING ECONOMY FIRMS

#### CONSENT AND BENEFIT

I have read and understood the Information Sheet you have given me about the research project and I agree to participate in the project	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
We will provide a feedback report to you when the project is completed. The report will provide industry-level data regarding multi-dimensions of absorptive capacity. If you would like to receive the report, please provide your email address.	
<input type="checkbox"/> Yes (please provide email address: _____)	
<input type="checkbox"/> No	

#### DEMOGRAPHIC & WORK HISTORY

Company name: _____	
Your Job Title: _____	I have worked in this position for _____ years
Your direct contact number: _____	
<b>IN TOTAL</b> , I have been in <b>SENIOR EXECUTIVE POSITIONS</b> (e.g., serving as CEO, MD, GM, director, manager) in this company for _____ years [ <input type="checkbox"/> less than 3 years <input type="checkbox"/> more than 3 years <input type="checkbox"/> more than 5 years]	
Do you produce products or supply intermediate goods for <b>foreign customers</b> ? <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Which are the positions in your organizations that you consider them as the members of your top management team?</b> Please specify at least 3 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	
<b>Which are the positions in your top management team that deal with operations, innovation and/or technology?</b> Please specify at least 2 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	



Appendix B3: Material for Study 2 (Respondent One) (Cont.)

(Respondent 1) □□□□/□□□□

**COMPANY DEMOGRAPHICS**

1	Our company has been operating for _____ years.						
2	Our company has been serving international market for _____ years.						
3	Please identify a <b>PRINCIPAL INDUSTRY</b> in which your company operates. <input type="checkbox"/> Automotive parts & Motorcycles <input type="checkbox"/> Machinery and industrial equipment <input type="checkbox"/> Consumer electronics & electronics components <input type="checkbox"/> Computer hardware and IT <input type="checkbox"/> Medical equipment <input type="checkbox"/> Chemicals <input type="checkbox"/> Telecommunications <input type="checkbox"/> Textile and clothing <input type="checkbox"/> Foods & food Processing <input type="checkbox"/> Rubber and plastics <input type="checkbox"/> Other. Please specify _____						
4	Please identify your company's <b>OWNERSHIP TYPE</b> . Is your company a part of family business group? <input type="checkbox"/> Yes <input type="checkbox"/> No						
5	Which is best described your company's ownership type? <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> State-owned firm <input type="checkbox"/> Other. Please specify _____						
6	Which is best described your company's equity ownership? <input type="checkbox"/> joint venture between Thai and foreign partners <input type="checkbox"/> Wholly-owned by Thais <input type="checkbox"/> Wholly-owned by non-Thais <input type="checkbox"/> Other, Please specify _____						
When <b>actual data</b> are not available, please use your <b>best estimate</b> to answer the question							
		<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
7	Please provide a number of your company's <b>FULL-TIME</b> employees						

**This is it! Thank you very much for your time ☺**

## Appendix B4: Material for Study 2 (Respondent Two)



(Respondent 2) □□□□/□□□□

### LEARNING AND UTILIZING KNOWLEDGE BY EMERGING ECONOMY FIRMS

#### CONSENT AND BENEFIT

I have read and understood the Information Sheet you have given me about the research project and I agree to participate in the project	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
We will provide a feedback report to you when the project is completed. The report will provide industry-level data regarding multi-dimensions of absorptive capacity. If you would like to receive the report, please provide your valid email address.	
<input type="checkbox"/> Yes (please provide email address: _____)	
<input type="checkbox"/> No	

#### DEMOGRAPHIC & WORK HISTORY

Company name: _____	
Your Job Title: _____	I have worked in the current position for _____ years
Your direct contact number: _____	
<b>IN TOTAL</b> , I have been in <b>SENIOR EXECUTIVE POSITIONS</b> (e.g., serving as MD, GM, director, manager) in this company for _____ years [ <input type="checkbox"/> less than 3 years <input type="checkbox"/> more than 3 years <input type="checkbox"/> more than 5 years]	
Do you produce products or supply intermediate goods for <b>foreign customers</b> ? <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Which positions</b> are considered as <b>members of top management team</b> in your organization? Please specify at least 3 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	
<b>Which position</b> in your top management team <b>deals with operations, innovation and/or technology</b> ? Please specify at least 2 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	

## Appendix B4: Material for Study 2 (Respondent Two) (Cont.)

(Respondent 2) □□□□/□□□□

**KNOWLEDGE SPECIFICITY**

<i>Referring to 5-6 years ago (period 2011-2012), please indicate your (dis)agreement with each of the following specific statements with respect to your company's <b>market knowledge</b>.</i>	Strongly Disagree					Strongly Agree				
The acquired knowledge about customers and competitors was quite specific to our foreign partner	1	2	3	4	5					
The knowledge and skills we learnt were tailored to the specific conditions of our foreign partner	1	2	3	4	5					
We largely depended on the specific human and physical assets in order to understand and acquire information from our foreign partner	1	2	3	4	5					

**KNOWLEDGE DEPTH**

<i>Referring to 5-6 years ago (period 2011-2012), please indicate your (dis)agreement with the following statements regarding <b>knowledge of your TOP 5 foreign customers/partners</b> in global supply chains.</i>	Strongly Disagree							Strongly Agree						
Our foreign partners presented <b>thorough understanding</b> and experience of current customers.	1	2	3	4	5	6	7							
Our foreign partners presented <b>in-depth knowledge</b> of the key market segment that we focus on.	1	2	3	4	5	6	7							
Our foreign partners presented <b>thorough technical knowledge and skills</b> within our <b>specialized domain</b> .	1	2	3	4	5	6	7							

**KNOWLEDGE BREADTH**

<i>Referring to 5-6 years ago (period 2011-2012), please indicate your (dis)agreement with the following statements regarding <b>knowledge of your TOP 5 foreign customers/partners</b> in global supply chains.</i>	Strongly Disagree							Strongly Agree						
Our foreign partners (e.g., customers or suppliers) offered/presented market information from <b>a diversified and wide-ranging customer portfolio</b> .	1	2	3	4	5	6	7							
Our foreign partners offered/presented knowledge of <b>multiple market segments</b> .	1	2	3	4	5	6	7							
Our foreign partners offered/presented R&D expertise consisting of technical knowledge from <b>a variety of background</b> .	1	2	3	4	5	6	7							

**KNOWLEDGE SPEED**

Refer to 5-6 years ago (period 2011-2012), please identify scale between 1 to 5 that best describes knowledge characteristics your company has gained from <b>your TOP 5 foreign customers/partners</b> in global supply chains:													
Slow		1	2	3	4	5	Fast						
Sluggish		1	2	3	4	5	Rapid						

**KNOWLEDGE EXPLICITNESS**

<i>Referring to 5-6 years ago (period 2011-2012), to what extent is the knowledge that you have gained from <b>your TOP 5 foreign customers/partners</b> in global supply chains ...</i>	Not At All					A Great Extent				
Written knowledge about technologies	1	2	3	4	5					
Procedural manuals or technical manuals	1	2	3	4	5					
Written knowledge about management techniques	1	2	3	4	5					

Appendix B4: Material for Study 2 (Respondent Two) (Cont.)

(Respondent 2) □□□□/□□□□

**LEARNING CAPACITY**

Referring to <b>3-4 years ago (period 2013-2014)</b> , please indicate your (dis)agreement with the following statements regarding your learning capacity.		Strongly Disagree							Strongly Agree						
1	The <b>search</b> for relevant <b>information concerning our industry</b> is every-day business in our company.	1	2	3	4	5	6	7							
2	Our management motivates the employees to <b>use information sources within our industry</b> .	1	2	3	4	5	6	7							
3	Our management expects that the employees <b>deal with information beyond our industry</b> .	1	2	3	4	5	6	7							
4	In our company, ideas and concepts are <b>communicated cross-departmental</b> .	1	2	3	4	5	6	7							
5	Our management emphasizes <b>cross-departmental</b> support to <b>solve problems</b> .	1	2	3	4	5	6	7							
6	In our company there is a <b>quick information flow</b> , e.g., if a business unit obtains important information it <b>communicates this information promptly</b> to all other business units or departments.	1	2	3	4	5	6	7							
7	Our management demands periodical <b>cross-departmental meetings to interchange new developments</b> , problems, and achievements.	1	2	3	4	5	6	7							
8	Our employees have the ability to <b>structure and to use collected knowledge</b> .	1	2	3	4	5	6	7							
9	Our employees are used to <b>absorbing new knowledge</b> as well as to prepare it <b>for further purposes</b> and to make it available.	1	2	3	4	5	6	7							
10	Our employees successfully <b>link existing knowledge with new insights</b> .	1	2	3	4	5	6	7							
11	Our employees are able to <b>apply new</b> knowledge in their practical work.	1	2	3	4	5	6	7							
12	Our management supports the <b>development of prototypes</b> .	1	2	3	4	5	6	7							
13	Our company regularly <b>reconsiders technologies</b> and <b>adapts them</b> accordant to new knowledge.	1	2	3	4	5	6	7							
14	Our company has the ability to <b>work more effectively by adopting new technologies</b> .	1	2	3	4	5	6	7							

**This is it! Thank you very much for your time ☺**



□□□□/□□□□

## LEARNING AND UTILIZING KNOWLEDGE BY EMERGING ECONOMY FIRMS

**CONSENT AND BENEFIT**

I have read and understood the Information Sheet you have given me about the research project and I agree to participate in the project <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span>
We will provide a feedback report to you when the project is completed. The report will provide industry-level data regarding multi-dimensions of absorptive capacity. If you would like to receive the report, please provide your email address. <input type="checkbox"/> Yes (please provide email address: _____) <input type="checkbox"/> No

**DEMOGRAPHIC & WORK HISTORY**

<b>Company name:</b> _____	
<b>Your Job Title:</b> _____	I have worked in this position for _____ years
<b>Your direct contact number:</b> _____	
<b>IN TOTAL</b> , I have been in <b>SENIOR EXECUTIVE POSITIONS</b> (e.g., serving as CEO, MD, GM, director, manager) in this company for _____ years [ <input type="checkbox"/> less than 3 years <input type="checkbox"/> more than 3 years <input type="checkbox"/> more than 5 years]	
Do you produce products or supply intermediate goods for <b>foreign customers</b> ? <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Which are the positions in your organizations that you consider them as the members of your top management team?</b> Please specify at least 3 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	
<b>Which are the positions in your top management team that deal with operations, innovation and/or technology?</b> Please specify at least 2 titles: <ol style="list-style-type: none"> <li>1. _____</li> <li>2. _____</li> <li>3. _____</li> <li>4. _____</li> <li>5. _____</li> </ol>	

□□□□/□□□□

**Scope of partner portfolio in global supply chains**

Referring to **5-6 years ago (period 2011-2012)**, please identify **THE COUNTRY OF ORIGIN** of your **TOP 5 foreign customers/partners** involved in direct contacts with your company during that period.

Example: 1st ranked	Japan
Example: 2nd ranked	Australia
1st ranked	
2nd ranked	<input type="checkbox"/> Do not have
3rd ranked	<input type="checkbox"/> Do not have
4th ranked	<input type="checkbox"/> Do not have
5th ranked	<input type="checkbox"/> Do not have

What is **the total number of foreign customers/partners** in global supply chains that your company has involved in direct contacts?

Answer: \_\_\_\_\_ firms

What is **the number of the country of origin** of foreign customers/partners that **your company has involved in direct contacts** in global supply chains?

Answer: \_\_\_\_\_ country / countries

**DEGREE OF INTERNATIONALIZATION**

When **actual data** are not available, please use your **best estimate** to answer the questions

	2011	2012	2013	2014	2015	2016
What percentage (%) of <b>FOREIGN SALES</b> were made to <b>TOTAL SALES</b> ?						
What percentage (%) of <b>FOREIGN PROFITS</b> were made to <b>TOTAL PROFITS</b> ?						
If applicable, what percentage (%) of <b>FOREIGN ASSETS</b> were made to <b>TOTAL ASSETS</b> ?						
If applicable, what percentage (%) of <b>OVERSEA SUBSIDIARIES</b> were made to <b>TOTAL SUBSIDIARIES</b>						

**PRODUCT DESIGN INVOLVEMENT**

Referring to <b>5-6 years ago (period 2011-2012)</b> , please indicate your (dis)agreement with the following statement regarding your company's <b>product design involvement</b> during that period.	Strongly Disagree							Strongly Agree						
Our company initiated <b>new designs</b> of products to <b>major customers</b> .	1	2	3	4	5	6	7							
Our company involved in <b>product development</b> with <b>major customers</b> .	1	2	3	4	5	6	7							

## Appendix B5: Material for Study 3 (Cont.)

□□□□/□□□□

### COMPANY DEMOGRAPHICS

1	Our company has been operating for _____ years.														
2	Our company has been serving international market for _____ years.														
3	Please identify a <b>PRINCIPAL INDUSTRY</b> in which your company operates. <input type="checkbox"/> Automotive parts & Motorcycles <input type="checkbox"/> Machinery and industrial equipment <input type="checkbox"/> Consumer electronics & electronics components <input type="checkbox"/> Computer hardware and IT <input type="checkbox"/> Medical equipment <input type="checkbox"/> Chemicals <input type="checkbox"/> Telecommunications <input type="checkbox"/> Textile and clothing <input type="checkbox"/> Foods & food Processing <input type="checkbox"/> Rubber and plastics <input type="checkbox"/> Other. Please specify _____														
4	Please identify your company's <b>OWNERSHIP TYPE</b> . Is your company a part of family business group? <input type="checkbox"/> Yes <input type="checkbox"/> No														
5	Which is best described your company's ownership type? <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> State-owned firm <input type="checkbox"/> Other. Please specify _____														
6	Which is best described your company's equity ownership? <input type="checkbox"/> joint venture between Thai and foreign partners <input type="checkbox"/> Wholly-owned by Thais <input type="checkbox"/> Wholly-owned by non-Thais <input type="checkbox"/> Other, Please specify _____														
When <b>actual data</b> are not available, please use your <b>best estimate</b> to answer the question															
	<table border="1"> <thead> <tr> <th></th> <th>2011</th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016</th> </tr> </thead> <tbody> <tr> <td>7</td> <td colspan="6">Please provide a number of your company's <b>FULL-TIME</b> employees</td> </tr> </tbody> </table>		2011	2012	2013	2014	2015	2016	7	Please provide a number of your company's <b>FULL-TIME</b> employees					
	2011	2012	2013	2014	2015	2016									
7	Please provide a number of your company's <b>FULL-TIME</b> employees														

### FINANCIAL RESOURCES

Referring to <b>3-4 years ago (period 2013-2014)</b> , please indicate your (dis)agreement with the following statements regarding your <b>company's past financial slack</b> during that period.							Strongly Disagree	Strongly Agree					
Our company's retained earnings have been sufficient for market expansion							1	2	3	4	5	6	7
Our company has a pool of financial resources that can be used on a discretionary basis							1	2	3	4	5	6	7
Our company is able to secure necessary bank loans.							1	2	3	4	5	6	7

**This is it! Thank you very much for your time ☺**